AUTUMN/WINTER 2013

CluedUp

SAFETY MATTERS FOR GA PILOTS

Civil Aviation Authority

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FLYING HIGH

Welcome to the latest edition of *Clued Up*, the Civil Aviation Authority's dedicated GA safety magazine, and the first since I joined the CAA back in June. I hope you were able to make the most of a very decent summer (by our standards) and clock up some serious flying hours.

For most of us, the onset of winter puts paid to a lot of our fun, although many pilots I know seize every opportunity to get airborne on those clear, crisp days that punctuate the winter months. For the rest of us it is time to sit back, read up, and make plans for 2014. So, to start you off, the following pages should keep your interest levels ticking over nicely.

This edition contains all the usual news and features, including a step-by-step best practice guide to joining the circuit; a look at why good decision-making when flying an unstable approach is so important; and, whether an analysis of relevant data can tell us anything about how level busts occur. There is even a piece from yours truly on the proactive steps pilots should use to keep safe.

A few recent announcements have begun to paint a brighter picture for general aviation in the UK, and 2014 is shaping up to be quite a good year. We have just completed a public consultation to deregulate the airworthiness of single-seat microlights and also, after considerable behind-the-scenes activity, EASA has agreed that the IMC Rating can continue for another five years, allowing many more pilots, both new and old, to obtain some great skills. Also, following the Government's Red Tape Challenge looking at the bureaucratic burden on general aviation, we are delighted to announce the imminent creation of a dedicated GA Unit within the CAA to streamline how private flying is regulated. Look out for more information in the next edition!

Finally, a quick reminder for pilots holding 'national' PPLs (issued before 2000) and NPPLs. You need to get them converted to the EASA equivalents by April 2014 to continue flying 'EASA aircraft'. Go to caa.co.uk/privatepilots for the full details.

In the meantime, enjoy the magazine, and please let us have any feedback by emailing infoservices@caa.co.uk

You can now follow the CAA on Twitter @UK_CAA and the Airspace & Safety Initiative, a major integrated GA safety project, @airspacesafety

Mike Barnard
GA Programme Manager
Civil Aviation Authority

> A few recent announcements have begun to paint a brighter picture for general aviation

An electronic version of this magazine is available at **archantdialogue.co.uk/cluedup**
To keep up to date on all airspace safety issues, follow **@airspacesafety** on Twitter. CAA Flight Operations Inspectorate (General Aviation), Safety Regulation Group, CAA, Aviation House, Gatwick Airport South, West Sussex RH6 0YR ***caa.co.uk***

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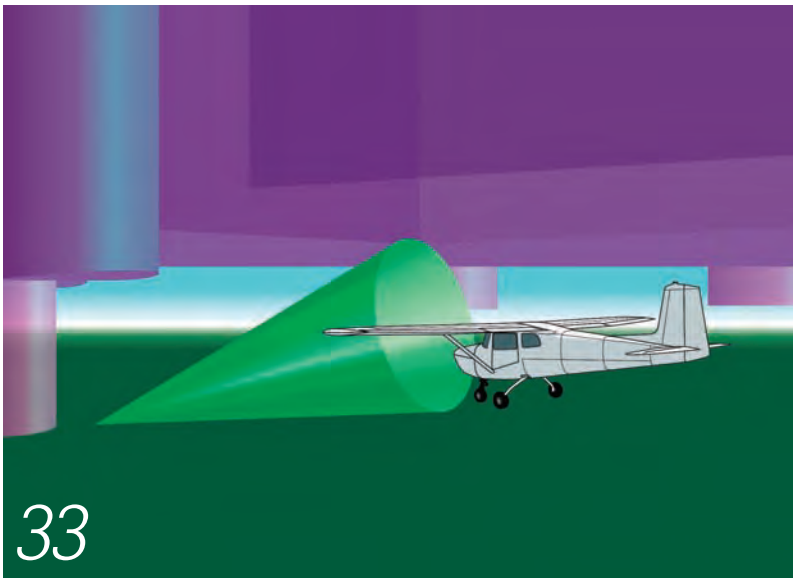

What's inside...

Clued Up magazine brings you the latest news in aviation safety, topical issues, advice and contribution from pilots, air traffic controllers and safety experts from across the UK's General Aviation community

For me, the over-riding message is that in similar situations we are our brother's keeper – p25

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New unit to boost general aviation

A DEDICATED NEW GENERAL aviation unit is to be formed within the Civil Aviation Authority to transform and streamline how private flying is regulated in the UK.

The move follows the General Aviation Red Tape Challenge, the results of which found that the current regulatory regime is often too prescriptive, impractical and inappropriate.

Plans for the new GA Unit, which is expected to be operational by April 2014, were unveiled by CAA Chief Executive Andrew Haines to General Aviation stakeholders in November. "The Government's GA Red Tape Challenge was both timely and welcome," he said. "It has given my colleagues and I at the CAA a powerful reminder that we need to inject more pace into how we introduce a more proportionate and risk-based regulatory regime for the UK GA sector and push harder for change across Europe to meet the demand evident from the GA community.

"I have often been told that the CAA has a level of engagement with its stakeholders that is unrivalled amongst other national aviation authorities. That may be the case, but we obviously need to achieve more and be better partners with the GA community.

"The new GA Unit I am setting up in the CAA is a key part of that new approach. Its focus will be entirely on the GA sector. It will ensure that the regulatory regime for the GA sector will take a different path and be less onerous to that applied to the commercial aviation sector."

SSDR for Microlights

ALL SINGLE-SEAT MICROLIGHTS could be designed and constructed, either privately or commercially, without airworthiness approval if new proposals come into force.

At present, only certain single-seat designs come under the SSDR category created in 2007, but it seems many pilots consider it unfair that some single-seat microlights are allowed to fly deregulated while others aren't. Pilots and owners spoke out loudly about the issue in a public consultation and proposals to allow all single-seat microlights to fall under SSDR were put forward.

The Civil Aviation Authority listened. It is now working with the BMAA and the LAA to see how to bring the change in. In the current SSDR category (which is for 115kg) the accountability for initial and continuing airworthiness remains with aircraft designers, builders and owners – and this will remain the same under the new proposals. You won't need a UK Permit to Fly or any other form of CAA approval, but microlight pilots will still have to hold a UK or EASA PPL, NPPL or LAPL and register their aircraft.

Welcoming the move, British Microlight Aircraft Association Chief Executive Geoff Weighell said the BMAA has worked closely with the CAA to extend the scope of SSDR to all single-seat microlights. He added: "We welcome the pragmatic approach that the CAA has taken leading to this reduction in regulation. We feel that the SSDR microlight revitalises the roots of our sector of aviation and its extension will benefit pilots and industry."

Light Aircraft Association Director Graham Newby added: "This is a good example of how the regulator and industry are working in partnership to reduce the regulatory burden, where appropriate."

GRASS STRIP AVIATION

Cloud lifts on IMC

THE UK'S IMC rating has been saved – at least for the next five years. The European Commission intends to allow the UK to continue issuing the rating for pilots until April 2019.

'National' ratings, such as the IMC (Instrument Meteorological Conditions rating) were to be phased out by April 2014, but there has been considerable lobbying of Brussels by the CAA and UK GA in support of the rating's retention.

The Commission's proposal, which is expected to be included in the next amendment of the European Aircrew Regulation, will extend this deadline, allowing flying schools to continue offering IMC training and many more UK pilots to add the rating to their licences.

It had previously been agreed that pilots who already held the rating before April 2014 would be allowed to use it indefinitely within the UK and to transfer it to a new EASA Private Pilot's Licence as an Instrument Rating (Restricted) and this agreement remains.

"The IMC rating has proven itself over the years to be a valuable safety tool for UK general aviation – training private pilots to cope with our very unpredictable weather systems," said CAA Chief Executive Andrew Haines.

"This is a sensible way forward which will aid flight safety in the UK. One of my first commitments to the GA community was that the CAA would argue strongly for the retention of the IMC rating and the privileges and safety benefits it brings. We will continue to make the case for the permanent preservation for the benefit of future generations of pilots."

KEITH WILSON/SFB PHOTOGRAPHIC

KEITH WILSON/SFB PHOTOGRAPHIC

KEITH WILSON/SFB PHOTOGRAPHIC

Pilot training goes state-of-the-art

THERE COULD BE A NEW, more relevant pilot training syllabus from 2014 to help ensure future pilots are better prepared to fly safely in the UK.

Training areas that could be improved include more information on the use of transponders, GPS, and the airspace system, while other topics that most PPLs will never need to know (for example purely theoretical or academic information) might well be left out in future.

The CAA has already begun work on the project together with key representatives from the GA pilot training community.

It will also liaise with colleagues in the European Aviation Safety Agency (EASA) and other EU National Aviation Authorities to develop the syllabus, which will continue to fully meet the requirements of the International Civil Aviation Organisation (ICAO).

Mike Barnard, the CAA's GA programme manager, said: "This work is part of a larger project to take a fresh look at the oversight of GA and to seek ways in which we can both enhance safety and reduce regulatory burden.

"We want to empower GA to take on much more of the responsibility for the sector's safety and for the CAA to get involved only where there is a need for oversight that no other organisation can undertake."

Jeremy Pratt, of Airplan Flight Equipment, one of the GA representatives helping to draw together the new syllabus, said: "This is a great opportunity to get a training syllabus that removes some of the items that we all know a PPL holder will never need to know or use, and replaces these with really important safety knowledge that a pilot needs to have but currently may not be well covered in the current syllabus."

And more help online

A new private pilot licensing portal has been developed to answer some of the most common pilot licensing questions and changes.

It includes a new set of introductory information supplements covering:

- Guidance for anyone interested in training to be a private pilot
- Converting to an EASA licence
- Information on the difference between EASA and Annex II aircraft
- How to add ratings to a licence
- How to keep your licence current
- Language proficiency requirements

As well as the supplements, the new pages (at caa.co.uk/privatepilots) also provide an easier way to check the requirements for various licences, ratings and applications and how to apply for them, either through a new online form or through a paper application.

The new guidance is the latest part of a programme to improve the CAA's pilot licensing services based on a root and branch review of the licensing process. It is delivering significant improvements including:

- A central hub to handle transactions, providing a stronger focus on customer service and deploying resources more effectively
- Putting in place a tracking system for each transaction that allows the CAA to actively pursue any item that has not been processed in the expected timescale and also allowing quicker responses to customer queries
- A comprehensive review of queries and complaints in order to better target areas for improvements
- Regularly retraining teams on key EU & UK Regulatory changes and implementing quality assurance checks on all CAA work
- Working with stakeholders to capture their views and proposals on how best to improve our systems
- Placing as many of the forms and transactions online as soon as possible to help private pilots (PPL applications and EASA conversions are now online at www.caa.co.uk/privatepilots).

Hub Director, Paul Chinn, said: "We fully recognise that the licensing requirements are very complicated and that in the past we have not been good at communicating them to our customers. The new supplements and application pages are the latest stage of the project to make our licensing work of the standard that our customers need."

The full pilot licence requirements are available in CAA publication CAP804 caa.co.uk/cap804 which has also been updated.

Safety and Airspace merge together

FOLLOWING THE CAA'S ANNOUNCEMENT that it was to merge the activities of its Safety Regulation Group and Directorate of Airspace Policy, initial details of the new Safety and Airspace Regulation Group (SARG) have been announced.

It is headed by Mark Swan, previously Director of Airspace Policy, and split into six teams: Intelligence; Strategy and Policy; Flight Operations; Airworthiness; Airspace ATM and Aerodromes; and Business Management.

"We have identified opportunities to work more effectively by joining up similar activities to provide a more consistent approach across the CAA," said Mr Swan.

"There are real safety benefits from bringing together our safety and airspace management activities into one function, without compromising our safety regulation, liaison with the military, or our airspace policy approval roles."

Farnboro' **'listening'** squawk permanent

THE LISTENING OUT SQUAWK introduced as a short-term measure to assist Farnborough LARS controllers during the 2012 Olympics has become permanent. This is largely down to the fact that as well as assisting controllers in seeing where traffic was it has also been very successful at preventing airspace infringements. The Farnborough Frequency Monitoring code is 4572 and the radio frequency to monitor for Farnborough LARS (West) is 125.250MHz. It is now the tenth such squawk code in the UK. Pilots flying within 8nm of Farnborough Airport are urged to use the code and to monitor the radio frequency too so that the airport can radio the pilot if they see them start to get too close to airspace. "Listening out squawks, officially known as Frequency Monitoring Codes, have played a vital role in reducing infringements of controlled airspace by enabling ATC staff to alert pilots if their aircraft looks likely to infringe," a spokesperson from the CAA said. Any aircraft fitted with a Mode A/C or Mode S SSR transponder can use the system. By entering the relevant four-digit SSR code into the transponder and listening to the published radio frequency, pilots signify to controllers that they are actively monitoring radio transmissions on that frequency. A leaflet containing the codes can be downloaded from the Airspace & Safety Initiative website at ***airspacesafety.com/wpcontent/uploads/2013/06/covermount_squawk_2012.pdf***

KEITH WILSON/SFB PHOTOGRAPHIC

Even more instrument approaches?

THE AVAILABILITY OF Instrument Approach Procedures could widen over the next few years with a potential increase in the number of approvals for smaller UK airfields.

Improvements in technology, in particular in relation to satellite-based navigation techniques, have made instrument approaches a more widely available option than has previously been the case because there is no requirement for costly ground infrastructure. At some locations it may be possible to replace old technology with the newer procedures.

The CAA has set out recommendations and a consultation for allowing a wider deployment of such instrument approaches at UK aerodromes, without compromising levels of safety.


KEITH WILSON/SFB PHOTOGRAPHIC

If it goes ahead, there could be an expansion of the number of aerodromes that can gain approval, ultimately resulting in instrument approaches being available at unlicensed airfields, provided certain criteria can be met.

All relevant sections of the aviation industry, from aerodrome managers, air traffic controllers, commercial air operators and general aviation pilots, are encouraged to take part in the consultation, which will be open until 31 December 2013.

Phil Roberts, Head of Airspace, Air Traffic Management and Aerodromes at the CAA, said: "We feel it is time to introduce a 'risk-based' policy which would allow instrument approaches to be introduced at a greater number of UK aerodromes.

"Although not exclusively related to satellite navigation systems – as applicants could still apply for an instrument approach based on conventional navigation aids – it is likely to be of most benefit at some of the smaller aerodromes where advantage could be taken of satellite technologies."

For more information, and to submit a response to the consultation, visit www.caa.co.uk/consultations

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New head of Airprox Board

STEVE FORWARD has been appointed as the new Director of the UK Airprox Board.

A former RAF Air Commodore, he takes over from Ian Dugmore, who now heads the Confidential Human factors Incident Reporting Programme (CHIRP).

A former Tornado and Harrier pilot, Steve saw active service in the Middle East before assuming tactical operational roles in the region. He was also involved in security planning for last year's Olympic Games.

Commenting on his new role, he said: "UK civil and military aviation has an excellent safety record, in no small part thanks to the work of organisations like UKAB, which has contributed greatly to the understanding of pilots and air traffic controllers of how airprox incidents occur, and more importantly how to avoid them in future. It is a real pleasure to be able to lead UKAB over the next few years."

Tracking down trends in airspace busts

A NEW PROJECT is starting up to augment the information supplied in Mandatory Occurrence Reports and develop a better understanding of why airspace infringements occur.

A questionnaire has been published on the Airspace & Safety Initiative (ASI) website for voluntary use by pilots. Information gathered will be analysed by the CAA's Safety Performance department to try to identify common factors or trends, and to suggest means of preventing future occurrences and the risks arising from them.

Data may be summarised into tables and charts and shared with other organisations with the aim of improving safety, but no personal information will be forwarded.

Air Traffic Services units responsible for managing the affected airspace may invite pilots who made infringements to complete questionnaires online (airspacesafety.com/infringement-analysis-form/) and email them to the CAA at safety.analysis@caa.co.uk. If the web-hosted version is not compatible with a pilot's computer operating system, hard copy submissions will be acceptable, but they will need either to print the online version for filling out, or contact the CAA for one to be mailed.

Pilots will not, however, be invited to complete the questionnaire if their infringement has resulted in submission of a CA939 'Alleged Breach of Air Navigation Law' report.

Further guidance can be found at: airspacesafety.com/infringement-analysis-form and on the Airspace Infringement website *flyontrack.co.uk*

/ NEWS IN BRIEF

QUIK LANDING
A Pegasus Quik made a forced landing near the Firth of Forth after the engine stopped. The fuel gauge was reading more than a quarter of a tank remaining but the pilot was unable to restart the engine so made a forced landing on a golf course driving range. On inspection the fuel tank was empty. The fuel gauge was still reading a quarter full.

RUNWAY RULE...
A metre-long metal ruler was found on the runway at Dundee. The ruler had been left on the PA-28's wing during maintenance and was not recovered when the work was completed. It is believed to have fallen from the wing at the beginning of the take-off run.

HOLE LOT OF TROUBLE
The left-hand wheel of a Cessna 177RG hit what was believed to be a rabbit hole at Henlow on take-off; the jolt was severe enough to open the rear cargo door which had been checked as secure and locked. The take-off was rejected and the aircraft shut down and the door relocked and secured. After a visual check a further uneventful take-off was carried out. On arrival, the undercarriage failed to show a green safe light. The landing gear was recycled several times and emergency handle used, the gear was visually confirmed as down and the aircraft landed safely. On inspection it was found that part of the undercarriage locking mechanism was broken.

HOW MANY BIRDS?
Twenty-two large gulls hit a Piper PA-23 as it took off from Lydd Airport. The flock of birds had not been visible due to haze and heat shimmer but rose up as the PA-23 took off and the pilot had insufficient time to avoid them. Full emergency was initiated by ATC and the aircraft landed safely. The runway was cleared of debris and an inspection carried out before normal operations resumed. The pilot cleaned and inspected the aircraft and then resumed the flight.

SMART PHONE
When a Cessna 172 suffered total electrical failure on climb-out from Leeds Airport the pilot routed back and contacted the tower by mobile phone. The approach was monitored on radar and clearance to land was given by phone and Aldis lamp. An engineering investigation found a broken battery cable at the terminal.

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NTSB releases GA safety videos

THE U.S. NATIONAL TRANSPORTATION BOARD is releasing a series of Video Safety Alerts highlighting circumstances and decision-making that have led to fatal general aviation accidents, with the aim of identifying and reducing risks for GA pilots.

They run for less than five minutes each and feature an NTSB investigator discussing specific aspects of safety that have been associated with a high volume of GA accidents.

The first video — Is Your Aircraft Talking to You? Listen! — features NTSB investigator Catherine Gagne addressing maintenance issues as they may affect pilots, mechanics and flight safety. Later videos will cover such topics as risk management and decision-making, flight in reduced visibility, and low-altitude stalls. The videos will be announced on Twitter and placed on the NTSB's YouTube channel youtube.com/user/NTSBgov

"The videos are intended to provide strategies and resources to help pilots better identify risks and improve safety within the GA community," said the NTSB, which investigates some 1,500 preventable GA accidents each year that kill more than 450 people, on average.

"Most accidents involve a similar set of circumstances that lead to fatal outcomes and this video series seeks to address and alter those conditions."

IFR boost for Permit aircraft

KEITH WILSON/SFB PHOTOGRAPHIC

SOME PERMIT AIRCRAFT MIGHT soon be able to fly Day IFR (Instrument Flight Rules) and in IMC. The CAA and Light Aircraft Association are examining ways that amateur-built and ex-type certified aircraft could operate safely under such conditions.

Moves to relieve the day/VFR limitation would be on a by-aircraft basis, with agreed airworthiness characteristics and suitable equipment.

The move follows permission being given to Vulcan XH558 to operate under daytime IFR rules and in IMC. It will become the first UK aircraft with a Permit to Fly to be allowed to operate under daytime IFR and in IMC, overturning the previous blanket VFR restriction on all 'Permit' aircraft.

Laser attacks on aircraft

A LARGE NUMBER of green laser attacks have been reported over recent months, across the country.

Among the reported locations are overhead St Athan, Blackpool, Birmingham (three different attackers), Eston (five attacks), Edinburgh, Aintree, Middlesbrough, Maidenhead, Skelmersdale, Sunderland, Glasgow and Great Yarmouth.

Shining a laser at an aircraft in flight is a criminal offence under UK law and if convicted, offenders can face a maximum penalty of five years in jail.

If you should be attacked, provide ATC with as much detail as possible as soon as possible so that law enforcement organisations can take appropriate action. Report the occurrence to the CAA as a Mandatory Occurrence Report (MOR).

ROBIN LUND/ALAMY

Lookout for paramotor pilots

THIS RECENT case highlights how we all need to start being more aware of paramotor pilots.

The UK Airprox Board has just finished looking into an incident where a helicopter flew 200ft above a paramotor – causing the pilot of the paramotor some distress from the helicopter's downdraft.

It took place in March 2011, 10 miles north of Doncaster Airport. The helicopter was Eurocopter, on a private flight with a passenger which took off from Edenthorpe, while the paramotor pilot, on a training flight, launched from Wormley Hill.

The paramotor pilot said in the report he became aware of a 'fast moving shadow approaching rapidly from behind'. He was radioed a warning message about the helicopter from a pilot on the ground. The helicopter passed directly overhead at 200ft but the paramotor pilot experienced a 'slight disturbance similar to that encountered in a thermal gust, and braced himself for a sudden deflation, however the wing remained stable'.

UK Airprox Board members concluded that the incident posed no risk of collision because the helicopter had seen the paramotor pilot and kept separation to 200ft. But the board's report also stated: "Some horizontal separation should have also been afforded by the helicopter pilot."

Paramotor technology is progressing so rapidly that now these pilots can fly long distances and at heights of up to 3000ft making them a new addition to the list of aircraft that GA pilots must keep an eye out for. The Airprox report also said that air traffic controllers will not be able to report the position of paramotors to pilots because they do not show up on radar displays. CU

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HOW STABLE DO YOU FEEL?

We've all been there. Either too high, too fast or, quite simply, too all-over-the-place. Here's how to stabilise your mind – and your aircraft

ALL PHOTOS BY KEITH WILSON/SFB PHOTOGRAPHIC | WORDS BY DAVID PHILLIPS

What do you do if approach is going to worms? Hang on and hope it will all sort itself out further down the line? Or do you think 'Nope, this isn't looking good, let's bin it and try again'? And if you do go around, what order will you do things in? I've seen the results of the former and they aren't always pretty, while the latter has produced some interesting sequences of events...

In the commercial world there have been a number of high-profile incidents and accidents that appear to have a common link – CFIT on final approach because the aircraft might not have been in the right steady state for landing.

Aircraft operators have strict criteria that must be met to continue an approach. In simple terms these are based around a set of 'gates' that ordinarily prescribe speed range, maximum rate of descent, aircraft configuration, position relative to desired flight path (lateral and vertical) and minimum power settings.

If these gates aren't achieved by a certain point, then you have to do a go-around – no question. Failure to comply at best results in a chat with a Training Captain. But what relevance does this have to General Aviation? I reckon that some of these gate concepts are wholly applicable to us. We should never be afraid of throwing away an approach that doesn't meet some simple criteria.

The following thoughts are generic because there are many variables that contribute towards the decision on whether or not to continue an approach: pilot qualifications and experience, aircraft performance and the operating environment will all influence decision-making. The overwhelming requirement, though, is to make a decision. I have seen the outcome of 'botched' approaches that have been costly in both time and money.

SPEED

In just short of 60 years there have been more than 43,000 Cessna 172s manufactured under various guises. We all know it's sturdy, relatively benign and simple to operate with good short-field performance and an undercarriage that will take a significant beating. So I find myself asking why I have observed so many bent C172 firewalls, written-off propellers and shock-loaded engines? I have also seen a few of them implanted in hedges at the far end of runways. Investigation always seems to point at landings that have been completed despite the aircraft being unstable on approach.

On certified aircraft the Aircraft Flight Manual (AFM) is usually very well written, clearly describing the configuration options together with recommended approach speeds. However, on chatting with pilots who have had such bad experiences, without exception they have all selected an approach speed at, or above, the highest speed quoted in the manual.

Many pilots on approach add a few knots for luck, not realising that these extra knots actually contribute towards them having to rely on luck. Sure, there are times where extra speed may help (gusty conditions) but, generally speaking, an aircraft should be flown within the speed range described in the AFM.

Importantly, if there *is* a speed range quoted for the top end of the range then it applies to aircraft at its maximum weight, whereas 'lighter' aircraft should be flown towards the bottom end of this range. Once the desired speed is obtained pilots should trim to it and then minimise the amount of control input necessary to maintain a stable approach.

Excessive speed (energy) brings all sorts of problems during landing. First, any landing distance performance calculations can be dismissed but, as importantly, the aircraft is going to spend more time losing energy in the flare before finally touching down. During this extended time period, there is scope for the wind to create mischief and the pilot to relax back pressure on the control column to try to expedite the landing. ➔

It's this last action that leads to bounced nosewheel landings, prop strikes and bent firewalls. My first top tip is to ensure that the aircraft is trimmed at an appropriate approach speed.

RATE OF DESCENT AND POWER

While it's relatively easy to adjust the rate of descent in a light aircraft, some pilots forget to address the secondary effects of doing so. Whether rate of descent is actually controlled by power or pitch might be a common after-flying bar discussion, the reality is that adjustment of either requires a corresponding input from the other. I like to think of it like this: Power + Pitch = Performance (P+P=P). So, if a pilot chooses to fly an approach with an excessive rate of descent, he needs to carefully plan his energy management when finally reducing this rate of descent in order to achieve the performance he requires.

A low rate of descent or 'shallow' approach can also bring problems. It's likely that the engine will be developing significant power while the aircraft is being 'dragged in', followed by a tendency to cut or 'chop' the power over the runway threshold to complete the landing. At this point a 'stable' aircraft has just become unstable; the P+P=P equation has changed, slipstream effect over the empennage has reduced and there is a likelihood that increased control column back pressure is required due to the aircraft being out of trim.

Piece of advice number two – plan and set a reasonable rate of descent. In most GA aircraft, this is around 500-750ft/min.

AIRCRAFT CONFIGURATION

This element largely relates to flap settings and ensuring the wheels are down (which is good). Again, the key element is setting up the aircraft early enough that you do not need to reconfigure at the latter stages of the approach. Adding flap changes the performance of the wing so you have to adjust pitch and/or power to maintain the desired performance.

That said, for many GA aircraft the application of the last stage of flap merely reduces speed by a few knots and this can be used as part of the approach planning. However, I strongly believe that pilots shouldn't significantly adjust flap settings at low height and certainly not once in the flare. Make sure you are trimmed in your desired configuration.

FLIGHT PATH

There's little point in a stabilised speed, rate of descent and correct configuration if the aircraft isn't pointing somewhere near the right direction. That probably sounds a tad obvious, but we still hear of, and read about, aircraft landing long/short or off the side of the runway. The art of flying a successful approach is being stabilised so that you only need to apply small adjustments to attain and maintain the ideal flight path.

GOING AROUND

One of the first manoeuvres taught to students is the go-around. The rationale (in case no one ever mentioned it during your training) is that there's an increased likelihood that early-stage pilots won't

1. Yep, I bent the prop **2.** Have you dragged it in or flown it in? **3.** Pay for a litre of AVGAS to fly another circuit or pay to repair a wing? **4.** A stable approach – nailed **5.** Nose, prop and wing damage is most common – and all because you 'added a few knots for luck'. **6.** You might have been stable before you selected flap, but you won't stay stable if you don't adjust attitude and re-trim for your approach speed

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> Plan and set a rate of descent. In most GA aircraft, this is around 500-750ft/min

achieve a stable approach and will inevitably have to decide to 'throw it away'.

Interestingly, as pilots become more proficient in landing, they tend to become less proficient in making go-around decisions, perhaps due to pride, economic factors or lack of confidence in completing the manoeuvre. Whatever the reason, there are numerous accident/incidents each month that wouldn't have happened if the pilot had chosen to go-around from an unstable approach and landing.

The manoeuvre should be instinctive, and while the required actions might require some urgency, they should not be rushed. Again, keeping things generic, the go-around should have the following format:

- Apply full power – nothing less. Be aware of rich cuts and carb heat.
- Manage pitch – the application of full power will result in a change of pitch if not managed. In some aircraft this pitch change is significant and you need significant elevator force until you can trim out some of this effort. Fly the aircraft, don't let it fly you.
- Arrest the descent – we're not yet looking to climb away, we want to stop the aircraft from descending any further. Some aircraft simply will not climb until you have completed the next step.
- Reconfigure if necessary – any reconfiguration should be minimal and in accordance with the AFM. Ordinarily, this only involves the removal of drag flap.
- Ensure you have climb speed – do not try to climb if there is not enough speed.
- Pitch up to an appropriate climb attitude – select a climb attitude that corresponds to the aircraft configuration. At reasonable height (a few hundred feet), remove flap, raise gear etc.

Note: I haven't mentioned RT transmissions. The 'go-around' call should take second place to all of the above. Finally, make the go-around decision early. If you are thinking about going-around, you probably should be going-around.

SUMMARY

I hope these thoughts stimulate discussion and encourage people to consider their approach profiles. If I were to be prescriptive, I'd offer that a pilot should have an aircraft correctly configured with a constant rate of descent and a steady approach speed in trim, by about 300ft when positioning to land. If this is achieved, the only challenge left is to achieve and maintain an ideal flight path. CU

1. Always double check your frequencies **2.** Which level of ATC service do you think a jet like this might be using at take off? **3.** Home for an AGCS at a small aerodrome **4.** Knowing who you are talking to determines the language you should use **5.** Typical scene of an operator providing a AFIS

1

2

LOOK WHO'S **TALKING**

Kevin Crowley, an Air Traffic Standards Specialist at the CAA, takes a look at RT protocol

ALL PHOTOS BY KEITH WILSON/SFB PHOTOGRAPHIC

Verbal misunderstandings never turn out that well, but in aviation they can be fatal. For a pilot, the difference between an instruction, and the supply of information, can mean the difference between a safe flight, and an incident or accident.

As well as understanding what has been said, a pilot should also be aware of who has said it. Is that an Air Traffic Controller (ATCO), Flight Information Service Officer (FISO), or Air Ground Radio Operator you are talking to? Effective communication relies on a two-way process, and as well as speaking a common language it helps if both parties are conscious of just who they are communicating with – this determines how a pilot should interpret the language used.

Many GA pilots, of course, operate quite happily in Class G airspace without needing to talk to anyone at all. However, many do need to use the radio to operate at their local aerodrome and, depending on the aerodrome itself, will receive an Air Traffic Control (ATC) Service, Aerodrome Flight Information Service (AFIS) or Air Ground Communication Service (AGCS). Knowing what to expect from each service, and the phraseology used, is something any pilot with a radiotelephony licence will have covered in training. However, knowledge fades and misconceptions creep in with time.

You can identify the level of service available at an aerodrome from the radiotelephony callsign:

1. ATC: 'RADAR', 'APPROACH', 'TOWER'
2. AFIS: INFORMATION
3. AGCS: 'RADIO', 'GROUND'

So what exactly is the difference between the three services?

AIR TRAFFIC CONTROL SERVICE

Aerodrome ATC provides information and instructions to assist in the prevention of collisions and to expedite and maintain an orderly flow of air traffic. Instructions and clearances from ATC to an aircraft on the ground, and while flying within controlled airspace and/or an Aerodrome Traffic Zone in Class G airspace, must be complied with at all times, unless the commander of the aircraft considers it unsafe to do so, in which case you must notify ATC. This includes compliance with the order in which ATC direct aircraft to approach to land and clearances to use the runway for take-off and landing, and to operate on the apron and taxiways.

If you are unsure of the clearance or instruction that has been passed, you must query it with ATC. Likewise if ATC communicate an order in which aircraft are to approach to land and you cannot see the traffic you are required to fit in behind, you must advise ATC, so that they can update you with the location of other traffic or communicate an alternative plan.

ATC will also provide you with information on other traffic that may affect your flight and will expect you to integrate with such aircraft in accordance with the rules of the air. Not all aerodromes providing an ATC service will have the benefit of radar to see aircraft, therefore you must keep a good lookout for other aircraft in case they appear in a location that you were not expecting.


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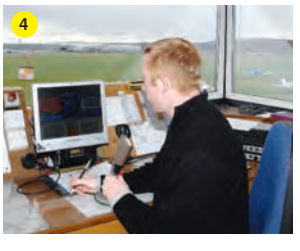
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6. Not all aerodromes providing an ATC service will have the benefit of radar like this one.
7. Listen out at during all stages of your flight

AERODROME FLIGHT INFORMATION SERVICE

The CAA's recently published Flight Information Service Officer Manual contains procedures and phraseology for use by a FISO www.caa.co.uk/CAP797. The manual also makes interesting reading for GA pilots as it details the procedures and phraseology they will encounter when operating at an aerodrome with an AFIS.

AFIS is an ICAO – defined service that is further standardised through the Eurocontrol AFIS Manual in the UK. It provides instructions to aircraft only while manoeuvring on the apron, and taxiway up to the holding point, or on completion of the landing roll back to your parking area. These ground instructions may include the use of 'Hold position' when you are at the holding point, which you are required to comply with.

In all other circumstances AFIS provides information and advice only, useful for the safe and efficient conduct of flight. Pilots who occasionally operate outside of the UK, especially into the airspace of our European neighbours, will need to be aware that the FISO control on the ground is unique to the UK.

When you have reported ready for departure and the Aerodrome FISO (AFISO) advises you that you may 'take off at your discretion', do not assume it is safe to do so; it is your responsibility to evaluate any traffic information that they have passed and decide if it is safe to take-off. If you consider it safe to do so then you should advise that you are 'taking off'. If you decide that this is not the case you must advise the AFISO that you are 'holding'.

There may be occasions when you report ready for departure that the AFISO passes you information on relevant aerodrome traffic and requests you to 'report lined up' or 'report lining up'. This may occur when an aircraft that has already landed has yet to vacate the runway. You must decide whether it is safe to enter the runway based on the information the AFISO has passed you. If in the example given, you feel there will not be sufficient time for the landed aircraft to vacate the runway and for you to take off safely before the next landing aircraft you must advise the AFISO that you are 'holding'. If you consider it safe to do so then you should advise that you are 'lining up' or when 'lined up' as appropriate. If you do enter the runway, the AFISO will subsequently inform you either 'runway occupied' or 'take off at your discretion' depending on the circumstances.

In the case of landing when you are advised 'land at your discretion', the AFISO is advising you that they do not know of any other traffic to affect your landing, but you must still decide if it is safe to do so while keeping a good lookout for any other traffic that might appear. Remember that the Rules of the Air do not permit two landing aircraft to be on the runway at the same time at an aerodrome providing AFIS or AGCS. If you feel that there is sufficient time for a currently occupied runway to become available for a safe landing before a go-around is necessitated, you should advise the AFISO that you are 'continuing'. When you consider it safe to land then you should advise the AFISO that you are 'landing'.

AFISOs are not permitted to instruct you to execute a go-around and therefore you must make this decision if the landing area is occupied, or it is not safe to land for some other reason, and it is not considered appropriate to 'continue', advising the AFISO accordingly that you are executing a go-around.

Bearing this in mind, there may be an occasion where having passed 'land at your discretion' the AFISO receives a request from an agency requiring an emergency crossing of the runway, such as the aerodrome fire service attending an incident on the aerodrome. In such circumstances the AFISO will assess your distance from touchdown and may if they feel it is safe to do so, advise you 'runway occupied' and receive an acknowledgement from you before allowing the vehicle to cross the runway. Once the vehicle has crossed the runway and provided it is safe to do so they will advise you 'Land at your discretion'. If at any time you consider it is not safe to continue your approach, it is your responsibility to execute a go-around and advise the AFISO accordingly.

When you are airborne and operating in the vicinity of the aerodrome, whether joining, leaving or operating in the aerodrome traffic pattern, the AFISO will provide you with information on other known aircraft operating in the vicinity of the aerodrome. An AFISO does not have a radar display so the information provided will be based on what he has been told by pilots, therefore you must keep a good lookout. You should also keep a good lookout for aircraft that might not have called the aerodrome and that the AFISO is therefore not aware of. It is important, therefore, when passing your own position, to be as accurate as possible as this will assist the AFISO and other aircraft in the vicinity to visually acquire your aircraft.

Pilots are responsible for safe integration with other aerodrome traffic and are required by the Rules of the Air to conform to the established traffic pattern. An overhead join may help in this respect, allowing you more time to visually acquire and integrate with other aerodrome traffic, but remember to check local procedures before getting airborne because local conditions such as airspace restrictions and other activities at the aerodrome may mean that another joining procedure is more appropriate.

Remember when an AFIS says "take off at your discretion" or "land at your discretion", this is advice and not a clearance, you must decide if it is indeed safe to take off or land.

AIR GROUND COMMUNICATION SERVICE

This is the service that is generally available at the majority of 'small' aerodromes which do not provide an AFISO or ATC service. No instructions should ever be given by AGCS. The service only provides information to assist a pilot in safe conduct of his/her flight. Information provided on other traffic will be based on pilot reports and so a good lookout should be maintained both on the ground and in the air. Also bear in mind that AGCS operators often do not have a full and complete view of the aerodrome surface or its local airspace.

In summary then, irrespective of whether the aerodrome has ATC, AFISO, or AGCS, it is important that pilots are familiar with the services provided, that they assume responsibility for the safety of their flight, and at all times display good judgement and airmanship.

The CAA also publishes a comprehensive reference guide to radiotelephony phraseology, www.caa.co.uk/cap413. It covers phrases to be used when arriving at and departing from aerodromes, flying cross country, operating at unattended aerodromes, carrying out instrument approaches and relaying emergency messages. CU

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THE FINAL 100M

***Mike Barnard** takes a personal look at the circumstances of a tragic accident that could easily have been prevented*

General aviation accidents are generally the result of 'human factors'. The airworthiness of even the lightest aircraft has improved substantially over the years to the point that, in a nutshell, their wings don't fall off. For sure, at the very lightest end, some powerplants are not as inherently reliable as their larger brethren, but, taken in the round, GA aircraft are safe and reliable when operated with care and consideration.

The term 'human factors' covers a wide range of situations where the human, rather than the machine itself, is the root cause of an incident or accident. Whether that is simply running out of fuel, or running out of luck, there is always the opportunity to reflect on what went wrong and ask the question 'what could I have done better to prevent what happened?'. As long as one remains around to ask the question, that is.

Most people, aviators or not, take for granted that to fly an aircraft requires some form of training and, in most cases, a licence. Apart from at the very lightest end of aviation, such as hang gliders, paragliders and powered parachutes, some form of licence is required, and indeed where it is not, numerous member clubs fill the gap and structure training regimes to help keep their members safe. A great example is that of the gliding fraternity who, decades before the arrival of EASA, had created an enviably safe airworthiness/training/licensing/operational regime without the need for regulatory oversight.

3

1. Flying as a pair lets you share the thrill of flight but there's two lives to keep safe. **2.** Returning back to earth safely takes skill and care, every time. **3.** It might look safe to fly but you must check and look over it each time you fly. **4.** Fledgling pilots build skills progressively and with the support of others

A weightshift microlight requires the pilot to hold at least a microlight class rating on a UK NPPL. The medical requirements are not onerous, nor is the training; it can be completed with a minimum of 15 hours instruction plus seven hours solo, at which point the pilot can operate solo, in defined weather conditions and close to home. A further ten hours dual and three hours solo permit these restrictions to be removed.

Fledgling pilots will naturally want to build experience progressively and gradually become more proficient and safer while exploring the envelope of their new-found freedoms. So why not simply ignore all of this, buy an aircraft and fly anyway? This is exactly what happened earlier last year in Scotland; the result, not unsurprisingly, was tragic.

The Gemini Flash microlight is a well-known and safe machine. Powered by a Rotax 503 two-stroke it carries two and performs well. This particular aircraft had been owned by the previous owner for most of its life. It was kept under cover and its last Permit Renewal was made in early 2008 which, according to its logbooks, was also the last time it flew. A new owner acquired it in mid-2011 but did not renew the Permit and soon after the aircraft was again sold. Neither of these recent owners notified the CAA of the ownership change and so the aircraft was de-registered in late 2011. At this point the aircraft was 23 years old, unregistered, out of Permit and owned by a non-pilot.

What do we know about this new owner and the steps he took to operate his new aircraft? He was in his late forties, so hardly a head-strong teenager. He had not joined a microlight club and, although there was some anecdotal evidence of him having taken lessons, no record was found of him having attended any formal flying training course, nor was it clear who had given him lessons or whether that person was a qualified instructor. He did not have a medical declaration, which is required prior to flying solo in a microlight. He appeared to have flown previously with a qualified pilot prior to having purchased the aircraft, but as a passenger and did not operate the controls.

At his point the ingredients for a tragedy were coming together. A new, unqualified owner of a de-registered and out-of-Permit aircraft who had undertaken no formal flying training and did not have a medical.

Fast forward to early 2012 to a field in Scotland; the new owner has invited some friends to watch him fly his aircraft. Two arrive at the field; one having limited

4

knowledge of aviation, the other an experienced microlight pilot. As they arrived, the owner was in the final stages of rigging.

The experienced pilot helped his friend complete the rigging and also performed an inspection of the aircraft using the pre-flight checklist. Basic 'additional' checklist items should also regard aircraft documents, insurance, pilot licence, medical etc. No evidence was found that ballast was carried, as recommended by the manufacturer for single-pilot operation. The scene was becoming set for a disaster.

The experienced pilot taxied the aircraft from the small paddock in which it had been rigged, to an open field from which his non-licensed friend was shortly to depart. The field itself was rectangular and around 225m long. Some additional length was available by using a diagonal track, however the centre of the field was poorly drained and with standing water. While this field may have proved sufficient for an experienced pilot, one cannot imagine that was the case here. With the engine at idle, the experienced pilot climbed out and discussed aspects of the forthcoming flight. The owner then donned a flying suit and a helmet before securing himself in his machine. By this time the engine had stopped, but the experienced friend reassured his pal that this was not unusual and restarted it.

The owner must have been feeling very elated. Here he was, suited and booted sitting at the controls of his own aircraft and looking forward to the prospect of sampling the joys of flight. This was going to be a great experience! Surrounded by his friends he prepared to take to the air. What a wonderful day to go flying, and what a wonderful tale to recount later. He taxied around the corner of the field and lined up facing the diagonal corner.

5. Flying can be a social activity... but it needs everyone to be at the top of their game. **6.** Flying by yourself is freedom like no other – just remember it's you in charge of your life and others around you

He carefully advanced the throttle and the aircraft accelerated to a fast taxy, but did not lift off. He closed the throttle and, after it came to a halt, the experienced friend walked over and explained that he would need full power to become airborne, and so the owner taxied the aircraft back to the downwind end of the field and lined up for take-off.

This time the owner advanced the throttle fully. The engine revved up and the aircraft gathered speed, veering across the field slightly to the left of the intended take-off path. Somewhere before the centre of the field it became airborne and pitched nose-up; this attitude increased rapidly to a very steep climb. What thoughts were running through the owner's mind as his aircraft leapt into the air, engine straining and the earth disappearing away at an alarming nose-up attitude?

Probably in panic he reduced the power, at which point the aircraft did what would be expected in a slow-speed nose-high full-power attitude; it stalled. The nose dropped rapidly and despite the owner desperately adding power, the aircraft struck the ground with a sickening crash in a steep nose-down attitude, banked to the right, wrecking both it and the pilot in full view of his friends. The flight had covered some 100 metres, only slightly further than Orville Wright's momentous flight in 1903.

Although the aircraft's documentation was not in order, the subsequent investigation found the aircraft to be in good condition. An area of mis-rigging, which had no bearing on the accident, provided further evidence of the pilot's lack of familiarity with his aircraft.

Many, many aspects emerge from this sorry tale ranging from the accidental to the downright tragic. The owner's decision to take to the air without formal training in an uninsured, unregistered, out-of-Permit aircraft beggars belief, and an experienced pilot friend was standing by and providing 'advice and guidance' for the flight.

Whether those involved took any heed of

the safety messages conveyed regularly to the UK GA population is debatable. One might imagine they did not. To apparently flout virtually every element of aviation regulation and common sense, particularly by those that should know better, seems inexcusable.

It is all too easy to read this article and come to the conclusion that this would 'never happen to me'. However, the tragic accident shows just how many safety messages were simply ignored in the build-up. Each of us will draw our own conclusions; for me the over-riding message is that in similar situations we are our brother's keeper.

Let's make sure we never ever are in a position where we fail to help break the chain of events leading to an accident, especially one so needlessly tragic as this one. Take care.

Source: AAIB Bulletin 11/2012 EW/C2012/04/01 CU

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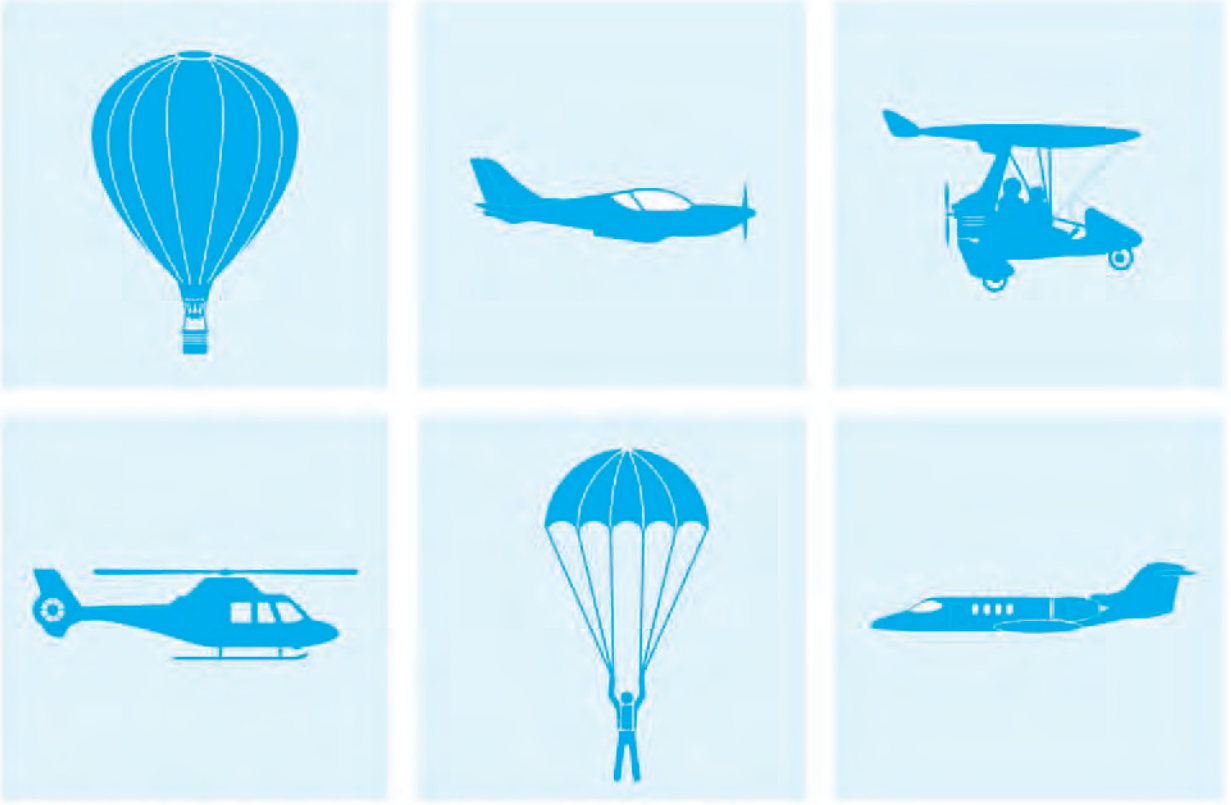

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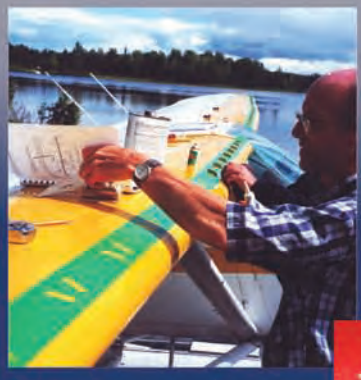

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JOINED-UP THINKING

*Some pilots fear the perceived risks of overhead joins being too high, or like to 'join straight-in', but the 'standard overhead join' is the preferred option – **and here's why***

ALL PHOTOS BY KEITH WILSON/SFB PHOTOGRAPHIC | WORDS BY IRV LEE

Assuming part of your personal self-preservation mantra as a pilot includes 'forewarned is forearmed', you might be interested to know that overhead joins are still a cause of concern and airproxes at some airfields.

A study group, running under the Airspace & Safety Initiative, is looking at the whole subject of flights in the vicinity and circuit of an airfield. No doubt the results will feature in a future *Clued Up* and on the ASI website www.airspacesafety.com itself.

In theory overhead joins should integrate arriving traffic into a standard airfield circuit, by initially using height to separate arriving aircraft from those already in the circuit and then descend the arrivals in a predictable manner through a sterile area ready to integrate with other traffic already in the circuit.

The actual procedure that an aircraft should take for a standard overhead join is fairly easy to illustrate. The Airspace & Safety Initiative recently produced a leaflet, illustrated here, which details the standard overhead join, but there are tips and checks worth exploring to increase the safety of the process and ensure it is flown correctly.

Let's imagine flying towards an airfield

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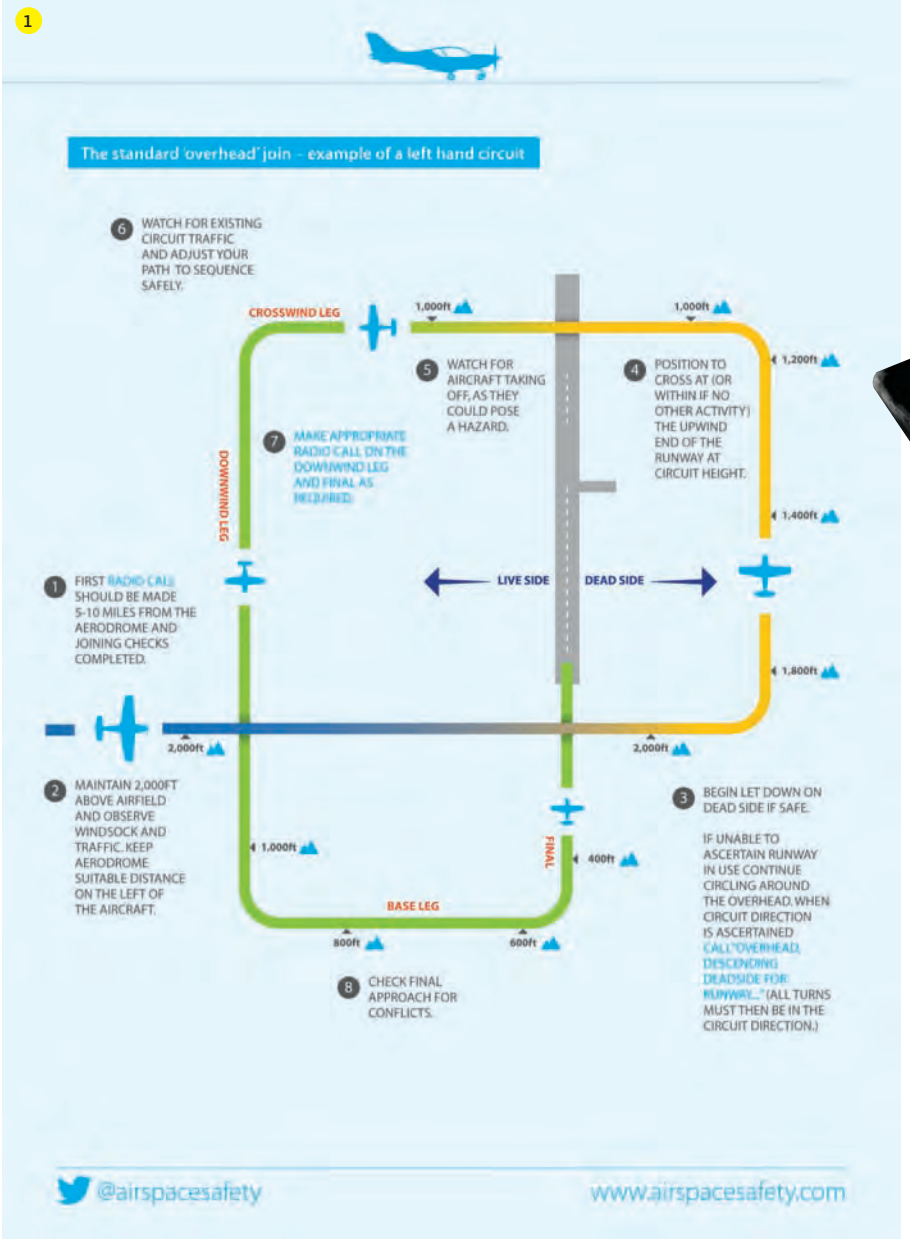

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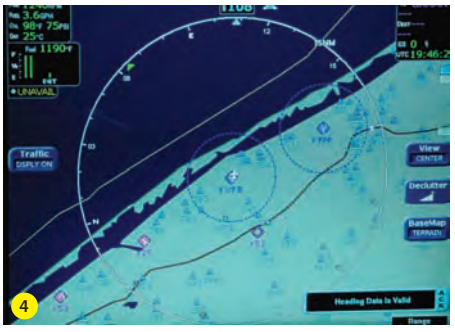
1. Pilots should know this diagram like the back of their hand. Memorise it and use it as your preferred method of joining the circuit **2.** If needs be, draw the line you'll follow on the standard overhead join on your kneeboard **3.** Your DI can drift, so adjust it to match the compass and bug the runway heading



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where standard overhead joins are carried out and the cloudbase makes one possible. An en-route check (such as the ubiquitous FREDA or similar) is good practice while a few minutes away from the airfield. Follow FREDA so, after checking fuel, use the radio (if possible) to get the runway in use and circuit information, then align your gyro direction indicator (DI) to the compass while flying straight and level and if you can, bug the runway heading so you can visualise how the runway is positioned relative to you. Next in the FREDA list is A for altimeter and now you need to give some thought to pressures, altitudes and heights, ready to position over the airfield.

Many UK pilots fly on 'QFE' which can now be set and checked, but it is not unknown to fly 'QNH' circuits, especially at unmanned strips, so the required altitudes for the overhead and the circuit need to be checked based on the known elevation of the runway.

An accurate current position and estimate for when you'll be in the overhead of the airfield as part of the radio call is going to make things safer for others in the vicinity. Too often, such detail is announced but is also sadly inaccurate, and therefore possibly misleading to another pilot monitoring the frequency. GPS can enhance safety by allowing easy confirmation of the pilot's ideas as to position and arrival time overhead, or suggest a pilot rethink.

Pilots need to be extra-aware of other traffic when approaching the destination, building a picture with look-outs and listen-outs. It's not only other aircraft approaching the overhead that come into play, but also traffic climbing out of the airfield to depart in the direction of the inbound aircraft.

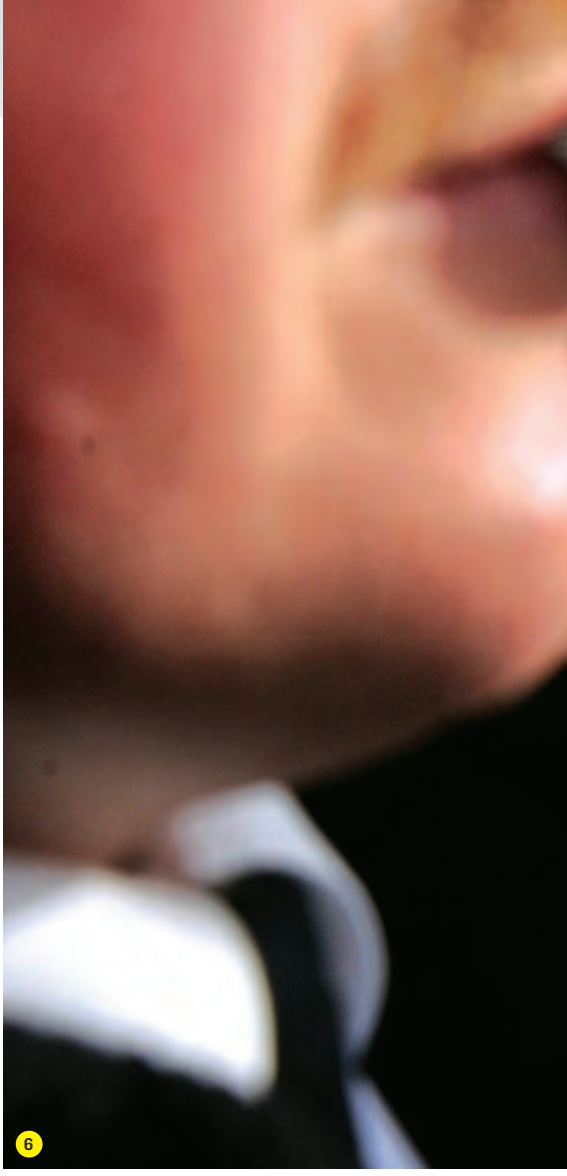
The overhead process is designed for all manner of destination airfields, even ones where radio is not available to pre-alert approaching aircraft to the circuit in use. In this case, rather than receive airfield information by radio, the pilot may need to observe the runway, windsocks and possibly signals square to decide runway in use. As the safe way to do this is from above, the standard join approaches at 2,000ft above the airfield, which initially gives good vertical separation from circuit traffic. The task is to identify the runway in use and which is the live (circuit) side of it.

Once the direction of the circuit has been determined, all turns made in order to position for the overhead join should be in the same direction as the circuit direction. This makes manoeuvres more predictable to others observing. So if left-hand circuits are in use, once that fact is established, every turn during an overhead join will be to the left and, similarly, a right-hand circuit means traffic aware of that should only turn right. It's worth noting that traffic approaching the overhead of a non-radio airstrip might take a short while to establish the circuit direction and runway in use and would not start the procedure until the information is known.

The idea that all arriving aircraft converge on the overhead brings out an immediate issue: this is one of the two main points of potential conflict with other traffic following the same processes, so good lookout is essential, of course, calls can be made on the local frequency or SafetyCom (135.475 Mhz) if there is no allocated one.

The pilots who do not like overhead joins suggest this overhead conflict point is a reason for avoiding them, but, from experience, the author believes the alternatives are worse. Many pilots who fly regularly at busy, non-controlled airfields and observe the numerous points of conflict when pilots do not use overhead joins often find it hard to avoid the conclusion that the standard overhead join is the safest option, providing *everyone* follows the recommendations.

Approaching the overhead, with the runway and circuit direction established and the live side of the airfield identified, the idea is to descend on the sterile 'dead' side, in one continuous descending curved 180° turn that positions the aircraft into a tight crosswind leg at circuit height. To start the process, the aircraft is positioned to cross the landing end of the active runway,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4. A GPS can help with your orientation of the circuit and its direction **5.** Look for signals square to find the direction of landing and whether the circuit is left- or right-hand **6.** You should be able to see the runway throughout your overhead join **7.** Call long final if you're between four and eight miles from the threshold

perpendicular to it, while still 2,000ft above it, heading away from the live side.

Deciding which is the 'landing end' of the runway is not usually the problem, but confusion over which way to cross it in order to start the procedure sometimes is. After planning the join, there is a simple last-second safety check that should be made as the aircraft crosses the airfield perpendicular to the runway: providing the landing threshold is disappearing under the nose of the aircraft, the runway itself should be visible out of the same window as the circuit direction – left-hand circuit, runway visible to the left of the aircraft, right-hand circuit, runway to the right-hand side.

In that case, the 'overhead' call can be made, and a descending turn can commence in the same sense as the circuit direction (left descending turn for left-hand circuits, right descending turn for right-hand circuits). However, if the pre-descent check reveals that the runway is on the wrong side of the aircraft, no descent is made and the aircraft is repositioned to cross the landing point in the opposite direction, making turns in the direction of the circuit.

Once the descent has started into the deadside, if an 'overhead' call was not possible due to other radio exchanges, "deadside descending" defines this part of the join. The runway will remain out of the same window all the way around the circuit until the aircraft is on final approach. The pilot should cross check the altimeter, pressure and intended level for entering the crosswind leg.

Apart from the obvious point of descending to circuit height or perhaps, in certain cases, circuit altitude, one of the pilot's tasks on the deadside is to locate other aircraft. It is important not to make the descent a spiral, it is a smooth curved 180° descent to position over the upwind end of the runway in a tight crosswind position. Spiraling on the deadside means it is very easy to come nose-to-nose with another aircraft joining the circuit and following behind, but descending at a slightly greater rate.

At the end of the deadside descent, about to enter the crosswind leg, tight in to the upwind end of the runway, the second point of conflict lies a little way ahead – the turn from crosswind onto the downwind leg. Local traffic flying circuits might have taken off and already be on their own crosswind leg, parallel, but outside the joining aircraft. So the joining pilot must decide whether the turn downwind will in any way disturb or create a conflict with someone who has just taken off, in which case, the joining aircraft should adjust speed and position behind the one already in the circuit.

There also seems to be a small but worrying trend to hear misleading positional reports in the circuit; for example, calling 'downwind' before an aircraft has turned from crosswind. This situation led to an airprox recently where the wrong positional call was found to be the root cause.

Even the often heard call 'turning downwind', (not approved terminology), can be misleading if other transmissions conspire to mean the first word is lost or indistinct. 'Downwind' calls themselves should become 'late downwind' once beyond the abeam of the landing threshold, and of course 'long final', does not mean an aircraft has been forced slightly further out than normal, 'long final' has a defined range of four to eight miles from the threshold. Out of position radio calls create confusion and unsafe situations as other pilots are distracted by looking for aircraft which are not where they say they are. It leads to unnecessary dangers so close to the end of the flight.

Joining a circuit needs the kind of airmanship that can pull together correct radio phraseology, the correct positioning in the standard overhead join. Not only that but you've got to be able to do all of it while listening to the radio calls of other pilots and while also looking to see where they actually are. Getting any of these aspects slightly off kilter ups the risk for an unsafe conflict. CU


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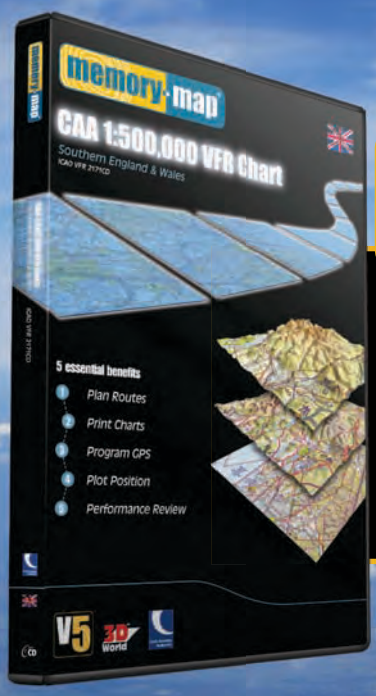

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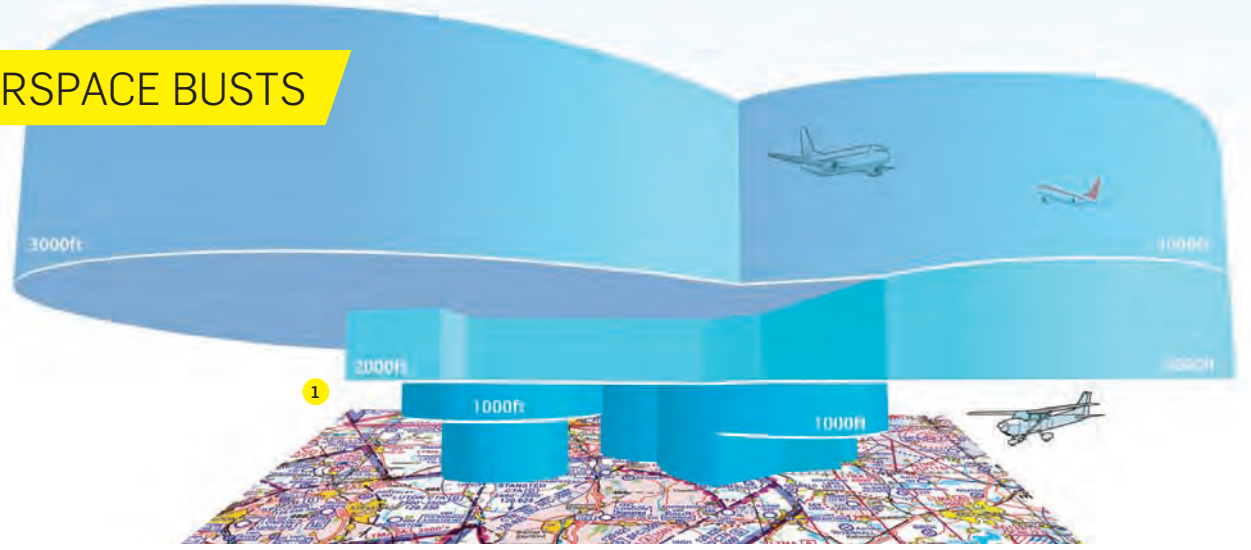


SO WHY ARE PILOTS STILL BUSTING AIRSPACE?

ALL PHOTOS BY KEITH WILSON/SFB PHOTOGRAPHIC | WORDS BY IRV LEE

If you want to know the reason, perhaps the best people to ask are those who are doing it

There's something new on the infringements front. Over the past two years or more, hundreds of standard surveys have been sent out to pilots who have been traced after infringing NATS-controlled airspace. These pilots didn't mean to infringe, and, wanting to help others avoid doing so, have voluntarily returned the surveys. NATS has analysed, counted and grouped the responses, in the belief that if other pilots know the main causes, they are less likely to infringe themselves in future.

Every month, the latest graphs of infringement numbers in NATS airspace are available on FlyOnTrack (flyontrack.co.uk). In each of the past three years, the top three infringements flagged as 'highest risk to operations' had something in common: none showed Mode C altitude (some were not transponding at all). That doesn't necessarily mean they could not have done so.

One of the worst infringements of recent years (and one that contributed to the establishment of the Transponder Mandatory Zones near Stansted) can be seen on FlyOnTrack as radar replay number 3. The transponder of the infringer was capable of Mode C, but the pilot knew very little about transponder operation, having gained knowledge about transponders 'on the fly' so to speak. The instructor checking out the pilot never picked up that the pilot needed transponder advice. If Mode C had been in use, as it should always be when available, the controllers would have ensured none of their aircraft would have been within five miles of the lost pilot, and this particular incident would have had a much lower risk assigned to it.

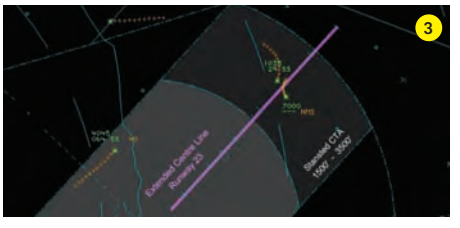
So, there's a new flying season resolution for you: Mode C if you have it, at all times, unless a controller specifically tells you to 'stop squawk altitude'. Are you a Flight or Flying Instructor, independent CRI or LAA Coach doing further training, rental checkouts or biennial training hours for revalidation? Together we should be able to widen this safety net by checking what our fellow pilots know about use of Mode C and spread the message one-to-one.

While looking at transponders, do you know the Frequency Monitoring Codes for your intended track? If I used the term 'Listening Squawks' instead, would that change the answer? A number of ATC units publish a squawk code that can be self-set while monitoring what is effectively a paired frequency to listen in on. You'll see the scheme, codes and frequencies and how to use them described on FlyOnTrack. This process is saving some infringements from happening, but also allowing ATC to talk to the correct aircraft seconds after an infringement happens, thereby reducing the risk of the infringement and minimising disruption, as contact can turn 'unknown infringers' into 'known traffic' in seconds.

For any pilots out there who believe an infringement just inside the airspace boundary without any other traffic nearby is not anything to get too excited about, what they don't see is that the controller has to assume the infringer is lost and future movements unpredictable. Following normal ATC rules, the controller now has to set a five-mile radius buffer around the unknown traffic immediately. But a five-mile radius in a zone is a big chunk of airspace. This often deprives a runway of the ILS or climbout, stopping approaches or departures until the problem is solved by the infringing aircraft leaving controlled airspace or by making contact and becoming 'known traffic', and normal operations can recommence.

If you imagine that all infringing pilots must be lost, you are wrong. Some infringers know exactly where they are, but they just haven't noticed in any preflight planning that they have airspace to watch out for at a particular point. It's there in the survey results too: Poor/Incorrect Preflight Briefing is one of three factors sharing second place in the top five reasons for infringements. If you skimp on preflight planning and hope to spot the airspace as you go, you might be trapped by the second of those three factors sharing second place, namely 'Misreading the Chart'.

Pilots are naturally reluctant to admit they are unsure of where they are and sometimes even wonder if there will be some follow-up



1: A map might show the lines but you have to use your mind to imagine what the airspace looks like **2.** Radar controllers can see you're going into trouble but if you're not on frequency they can't call you to tell you you're going wrong **3.** Stansted's zone was a hot spot for infringements – until a Transponder Mandatory Zone was established

or investigation should they call an ATC Unit or Distress and Diversion (121.5) and admit it. If you are outside controlled airspace and simply lost, there's no follow up to a call and you've made someone's workday a little more interesting than it would have been.

If you are already inside airspace that you shouldn't be in, the actual fact that you voluntarily called a controller quickly is a huge mitigating factor when the infringement is examined.

We somehow have to change our thinking so that pilots call a civilian or military controller quicker than they would now if they feel unsure of position. Why spend minutes with that horrible doubt inside you, probably with less time for proper lookouts, trying to figure out where you are yourself, when someone on 121.5 is on duty, trained and, let's face it, is paid to tell you where you are within seconds of you asking?

Supposing you still think it's best to work out where you are for yourself brings us to the *Top of the Pops* reason for infringing: 'Misidentification of a Land Feature'.

'Misdentification of a Land Feature'. This is the number-one most common cause reported by pilots in the survey as the reason for their infringement. Personally, I'd call up the moment that I was unsure of where I was, but then I've seen behind the scenes on a few occasions and know that there is no witch hunt involved. It's a free safety net, a free safety net provided for us all. Perhaps many of the pilots who have taken advantage of the annual 'Visit ATC Day' programme promoted by the Airspace & Safety Initiative (ASI) would also have no hesitation in calling earlier should doubts over position begin to creep in.

Turning to the recent analysis of infringements by NATS (to remind you, a summary is available on FlyOnTrack Statistics page), note that there were almost 400 survey replies from infringers and more than one reason can be assigned to one infringement, meaning the totals of the reasons given is far in excess of 400. Let's be clear, rather than annoy professional statisticians, no one claims this is a survey of all infringers, returns were voluntary, and of course some infringements are not traced. However, analysis of the returns provide a lot of insight into how a pilot might self-protect from future infringements. Forewarned is forearmed.

Let's start with an interesting question. Out of these 396 infringements, how many had an instructor (FI or CRI) on board? Answer: over 80, that is to say, over 20%.

It just needs an enthusiastic instructor concentrating too hard purely on the teaching task and lookout for other aircraft and today's wind stronger and 180° reversed on the general wind direction during all the lessons in the previous week. If instructors become genuinely aware of this statistic, I suspect the percentage of infringement involving them will reduce dramatically. 'Pilot Workload' is the third of the three reasons for infringements that share second place.

It's not only the instructors who get distracted and overloaded, and the survey results show that it's vital that pilots start to recognise when such things are happening. If pilot workload and distractions can be identified and you understand that they can be the start of a handling or navigation error chain, it becomes easier to break the error chain early.

Similarly, try to identify potential future overload even before you take off, or look out for it should it start to happen en route. You can plan in advance on how to cope, it's all part of the 'Threat and Error Management' that we will hear more and more about.

For example, if you are not very familiar with the operation of a complex GPS in the aircraft, decide during preflight planning that you will drastically simplify how you will actually use it during the flight. Similarly, if any piece of equipment suddenly starts to demand too much of attention during the flight, it's vital to recognise what is happening and revert to a less demanding procedure if possible. There's also no reason why you shouldn't tell a controller if you are subject to unplanned heavier workload due to some equipment problem; it can help them keep an eye on your progress.

What about technology? NATS has worked with SkyDemon and Aware to make quantum leaps in preflight planning and airspace alerts while airborne. Other companies are now alert to the popularity of the early market leaders.

So, if we have 396 infringement reports, how many pilots had a specific Airspace Alerting Device with them? The actual answer is: five. So why would these five pilots infringe having invested in technology as an aid to avoid infringements? One unit was not switched on until the infringement was in progress and, once on, it instantly informed the pilot, but too late! Two units ran out of power and switched off (one due to a power lead dropping out unnoticed).

That leaves two and they give us a great learning point. Both 'sounded' to alert each pilot to the airspace eventually infringed, but in both cases, the pilot was busy with another task, and knew of other airspace very close that he was definitely not going to infringe. In each case, the pilot, expecting an alert for the 'known' airspace nearby, did not actually check the device to see why it had activated. Unfortunately the device was warning of different airspace that had been overlooked or forgotten.

We have no figures on the number of pilots that have avoided infringements through having an alerting device working on board; it seems worth noting how few infringements had them and the reasons why those few still infringed.

Hopefully, these survey results will encourage a growth in sales of these devices and, if I may suggest, they are a 'must' for instructors who have a natural distraction during their flying by the very nature of their task. The lesson learned for all is that once alerted, don't assume, check the alert itself.

So, hopefully, this has given you a taste for more reading of the survey results on FlyOnTrack and more analysis will come out. Congratulations on reading to the end, I suspect you are less likely to suffer from the fifth most common reason for infringements than the ones who saw the topic and moved on. What is the fifth reason? 'Pilot Complacency'. CU

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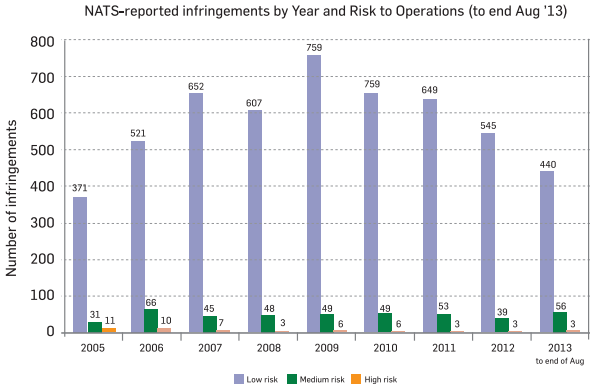

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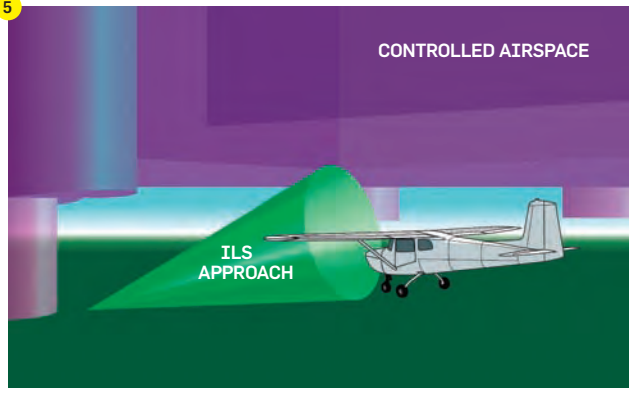

4. This graph shows the number of infringements since 2005. As you can see, 2009 was a peak year but gradually it's starting to fall – with a significant reduction in 2013. **5.** The pilot is focused on the green cone depicting the ILS, but if he doesn't watch other airspace boundaries, both horizontal and vertical, he could be seconds away from infringing

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01

Super Puma ditching query

ALL PHOTOS BY KEITH WILSON/SFB PHOTOGRAPHIC

INTERIM REPORT OF ONGOING AAIB investigation into the crash of a CHC Helicopters AS332 L2 Super Puma on August 23, 2013, while on approach to Sumburgh.

The helicopter was flying from the Borgsten Dolphin North Sea platform with the commander acting as the Pilot Flying (PF) and the co-pilot as the Pilot Not Flying (PNF). The plan was that the commander would fly the approach while the co-pilot monitored the vertical descent profile.

The commander briefed that he would reduce the airspeed to 80kt for the latter stage of the approach and the helicopter, under radar control from Sumburgh ATC, was vectored to the north before being turned onto a south-easterly heading and being cleared to intercept the localiser for Rwy 09.

The approach was conducted with the autopilot in three-axes mode, according to data from the Combined Voice and Flight Data Recorder (CVFDR). At 6.4nm the commander advised that he was starting the descent and selected a vertical speed of 500ft/min, engaging the autopilot vertical speed mode.

At 3nm collective pitch was reduced, engine torque stabilised at 18% and the airspeed was reducing at a rate of about 1kt per second. At approximately 2.6nm and an altitude of 800ft, the co-pilot advised that they had 500ft to go to Minimum Descent Altitude (MDA). The airspeed was 87kt and descent rate was about 700ft/min. When the airspeed reached 80kt collective pitch was increased, with an accompanying increase in engine torque to 24%. At 2.2nm the Super Puma was at 560ft and 74kt and pitch attitude started to increase slowly as the autopilot maintained the selected vertical speed, while the airspeed continued to decrease.

With the co-pilot advising that the target altitude at 1nm was 390ft, the commander reduced the rate of descent from 700ft/min to about 500ft/min, and several seconds later the co-pilot advised they had 100ft to go to MDA. Descent rate was being maintained at about 500ft/min, but airspeed had by then decreased to 54kt and pitch attitude was 8° nose-up with engine torque stabilised at about 24%.

At 240ft the helicopter's pitch attitude was 20° nose-up, airspeed 32kt and rate of descent about 1,000fpm and increasing. There was then an increase in collective pitch and engine torque and the cyclic stick was moved forward. At 230ft the airspeed had reduced to below 30kt (airspeeds of less than 30kt are not recorded on the CVFDR), and in response to the increase in collective pitch, engine torque increased at a rate of about 14% per second. The helicopter's descent rate nevertheless continued to increase, and as it passed through 100ft engine torque was 115% and the descent rate was approximately 1,800fpm.

At some point the commander had seen the sea, but was unable to halt the Super Puma's descent, and it struck the surface 1.5nm from the threshold of Sumburgh's Rwy 09, yawed to the right and approximately level. The co-pilot, realising that they were about to enter the water, had armed its flotation system. The helicopter rapidly inverted, but remained afloat. The exact rate of descent is not known, but the impact was survivable; four out of 18 people were killed.

Later examination of the main rotor head and the remains of its rotor blades revealed evidence of high-speed rotation at impact. Similar evidence was found on the tail rotor blades and their driveshaft. The main rotor shaft was intact, as was the main rotor gearbox, and neither they nor the engines showed evidence of pre-impact damage.

As of October, wreckage examination and analysis of the recorded data had revealed no evidence of a technical fault that could have caused the accident, although some work remained to be completed. The AAIB said that its ongoing investigation would focus on the operational aspects of the flight, specifically the effectiveness of the pilots' monitoring of instruments during the approach, operational procedures and the training of flight crews. The survivability aspects of the accident will also be examined in detail. CU

FOR FURTHER INFORMATION ON INCIDENT REPORTS, VISIT *AAIB.GOV.UK* ➔

02

Who's in command?

TWO PILOTS WERE FLYING a Popham-based, group-operated aircraft. In the left seat was Pilot 1, who had not flown within the previous 90 days and not in the accident aircraft for nearly two years. Pilot 2, in the right seat, was acting P1 and supervising check pilot, as required when a group member was undergoing checks having exceeded its 90-day, three take-offs and landings requirement.

After performing upper air work, the pilots returned to Popham and flew circuits, including a landing demonstrated by Pilot 2. In the latter stages of another approach flown by Pilot 1, he judged he was too high and decided to go-around, but, as he applied full power, the aircraft turned left through 90°, struck the tops of trees and fell to the ground. Both pilots were seriously injured.

Pilot 2 later said that the engine was at full power but the airspeed was low and, just before impact, the aircraft appeared to stall and its starboard wing dropped. A witness described the left turn as being gentle at approximately 10° of bank, then the aircraft slowed and failed to gain height before striking the tree.

Pilot 1 believed that Pilot 2 was PIC for the flight in accordance with group policy, but the AAIB produced evidence that Pilot 2 performed the role of PIC until Pilot 1 had carried out three take-offs and three landings to satisfy the 90-day currency requirement.

Pilot-in-command is defined by The Air Navigation Order (ANO) as 'a person who for the time being is in charge of the piloting of an aircraft without being under the direction of any other pilot in the aircraft'. It also states that the holder of a PPL (A) 'may not fly as PIC of an aeroplane carrying passengers unless within the preceding 90 days the holder has made at least three take-offs and three landings as the sole manipulator of the controls of an aeroplane of the same type or class'.

Some time after the flight, Pilot 2 said he had become aware that the group policy was

'an incorrect interpretation of the ANO' and that, with the exception of the landing he demonstrated, he was neither handling pilot nor PIC during the flight.

The CAA provided the following clarification: "The pilot was certificated for single-pilot operation and therefore the only person who can be a member of the flight crew in addition to the handling pilot is a flying instructor or supervising handling pilot...

"A pilot wishing to regain 90-day currency to be entitled to carry passengers must complete at least three take-offs and three landings as the sole manipulator of the controls. These manoeuvres must be flown either solo or under the supervision of a flying instructor, as a passenger cannot be carried until the currency is regained.

"The rationale behind this rule is that a flying instructor has been trained to fly an aircraft from either seat and to know when to intervene if the pilot under instruction or supervision appears to be struggling to handle the aircraft safely.

"Pilot 1 had not flown at least three take-offs and three landings in the 90 days before the accident flight (in accordance with the operating group's) policy, so he believed that Pilot 2 was PIC of the aircraft. Pilot 1 was not within the 90-day requirement; he therefore should not fly as PIC of an aircraft carrying passengers. Pilot 2 was not a flying instructor and therefore should not be PIC whilst another pilot regains 90-day currency, nor was he qualified to give direction to Pilot 1."

The AAIB concluded: "The most likely cause of the accident is that the handling pilot allowed the speed to reduce during the go-around. This, possibly combined with asymmetric fuel loading, made control of the angle of bank difficult, causing the aircraft to turn to the left prior to stalling as it entered the treetops. It is probable that the slow speed of the aircraft put it in a high drag configuration that prevented it from climbing." CJ

INCIDENT DETAILS

- **Aircraft Type**
  Piper Caribbean
- **Date and Time**
  September 15, 2012 at 1400
- **Pilots Flying Experience**
  (1) NPPL, 88 hours, 8 on type
  Last 90 days 0 hours
  Last 28 days 0 hours

  (2) PPL, 940 hours, 341 on type
  Last 90 days 1 hour
  Last 28 days 1 hour

FOR FURTHER INFORMATION ON INCIDENT REPORTS, VISIT *AAIB.GOV.UK*

/ INCIDENT REPORTS IN BRIEF

Breezer B600
Membury Airfield, Berkshire
June 25, 2011

Shortly after take-off the Breezer's engine stopped due to a loss of fuel pressure. The pilot reacted well and made a forced landing but had a heavy touchdown. The engine stoppage was probably caused by a placard blocking the fuel tank outlet. The fuel tank outlet in a Breezer isn't fitted with a strainer or filter because none are required by the regulations for a 'Light Sport Aeroplane' (LSA). The aircraft manufacturer has now taken safety action to install a fuel strainer at the fuel tank outlet of all new aircraft and is offering the same modification to retrofit on other Breezer aircraft. The AAIB has asked EASA to amend the certification rules for CS-LSA so that all types must now have a strainer installed at the fuel tank outlet. The ASTM International Committee F37 on Light Sport Aircraft has also been asked to prepare a change to its LSA design specifications too.

Aeronca 7ACA
Farm airstrip, Wisborough Green, West Sussex
September 1, 2011

An Aeronca landed heavily on a farm strip after flying through downdrafts on approach. It was evidently a hard touchdown, most likely to have jolted the pilot. As a result, the AAIB urged the CAA to promote the benefits of fitting seat cushions made from energy absorbing foam. The CAA accepted the recommendation but pointed out that this can only be done in light aircraft where it is "technically feasible to do so". Expect to see more advice about energy absorbing cushions in more of the CAA's safety publications. The first piece of advice on this appeared in GASIL 11 of 2012.

Flight Design CTSW
Caird Park Golf Course, Dundee
August 12, 2009

This accident took place over four years ago and drew attention from national and local press because the pilot and aircraft ended up in a tree in a golf course. He experienced engine trouble over Dundee and then went for a forced landing, having eyed the golf course as a suitable location to set the CTSW down. The investigation identified that the pilot may have taken off thinking he had more fuel in the tanks than there actually was. Flight Design GmbH with P&M Aviation revised their assessment of the unusable fuel in the CTSW aircraft and issued Service Bulletin 131 dated June 18, 2012. The bulletin gives very clear instruction on fuel management and tells CTSW pilots to land at the latest when fuel is no longer visible in either of the sight gauges. This results in noticeably higher fuel reserves to avoid similar occurrences in the future.

DA42
Stapleford Airfield, Essex
June 3, 2010

Many flying schools operate DA42 aircraft throughout the country. The recommendations resulting from this accident have been ongoing for the past three years. The accident involved a jammed right landing gear leg because of the failure of a trunnion, which connects the landing gear damper to the wheel trailing arm. The failure in the trunnion was caused by stress corrosion. Diamond Aircraft Industries was asked to issue a Mandatory Service Bulletin to help maintenance organisations understand how to inspect and maintain the trunnions. Over the course of time, Diamond decided to completely change the design of the joint instead of having a costly and time-consuming inspection system. On February 7, 2011, EASA issued Airworthiness Directive 2011-0020 mandating installation of an improved joint design. So all DA42 aircraft have now had this joint changed and all future DA42 aircraft that are manufactured will have the new design too.

Pegasus Quik
100ft below summit of Ben More, Stirlingshire
May 12, 2012

A Pegasus Quik microlight was being flown by an experienced microlight pilot accompanied by the owner, who was a passenger, in the rear seat. They were flying from Perth to Glenforsa at about 6,000ft, above scattered cloud. Approximately 2nm east of Ben More mountain the microlight descended in good visibility, remaining clear of the cloud and then levelled off below the cloud base and flew approximately 100ft above the height of the summit of Ben More. It continued towards the mountain but encountered severe turbulence in the lee of the summit. This appeared to cause the pilot to lose control of the microlight, which impacted the south side of the summit, fatally injuring both occupants. The descent and flight up to one second before impact was recorded on a video camera attached to the aircraft. Expect to see a new Safety Sense Leaflet covering the activity of mountain flying for the UK general aviation community because of this accident.

Robinson R44 II
Furz Farm, Murhamchurch, Bude, Cornwall
July 24, 2011

The pilot was on a flight to visit friends near Padstow, Cornwall but unintentionally entered IMC and climbed to about 4,000ft amsl. The pilot lost control of the helicopter and, after a very high rate of descent, crashed. There was a post-impact fire and the pilot was fatally injured. Contaminants were found in the fuel, but were not contributory to the accident, so a Safety Recommendation has been made to the CAA to publish guidance to General Aviation pilots regarding the quality and storage of fuel for use in aircraft.

Robinson R22 Beta
Ely, Cambridgeshire
January 6, 2012

This is the type of accident that many helicopter pilots fear most. A Robinson R22 helicopter was flying from Manston to Fenland in January 2012. Near Ely, witnesses on the ground saw it pitch and roll rapidly. They then watched on and saw the two main rotor blades separate from the rotor head. The R22 fell to the ground. The AAIB has now urged EASA to amend the requirements in Certification Specification Part 27 to reduce the risk of 'loss of main rotor control' accidents in future light helicopter designs. EASA has acknowledged they've received the Safety Recommendation, saying it is under consideration and that the outcome will be communicated in due course. The FAA gas received the same recommendation and is also deciding on its response.

FOR FURTHER INFORMATION ON INCIDENT REPORTS, VISIT *AAIB.GOV.UK*

03

Spin risk

INCIDENT DETAILS

- **Aircraft Type**
  Piper Tomahawk II
- **Date and Time**
  August 16, 2012 at 1935
- **Commander's Flying Experience**
  CPL and FI, 10,440 hours (estimated), at least 150 on type
  Last 90 days 135 hours (estimated)
  Last 28 days 45 hours (estimated)

THREE MINUTES AFTER TAKEOFF on a dual sortie, the instructor asked Hawarden's ATCO if he could operate "Not above 4,500ft". There were no further calls. He usually landed 15 minutes before the airfield closed, in this case at 2000, and at 1934 the ATCO noticed that the aircraft was no longer generating a radar return. Attempts to contact it produced no response, so overdue action was initiated and a police helicopter was launched to search the last known position.

The Tomahawk had crashed in a field killing both occupants after striking the ground at a low forward speed and high rate of descent, 45° nose down and 20° left wing low. From the small wreckage area, relatively modest damage, asymmetric damage to the wings and main landing gear legs, and the aircraft's attitude when it struck, investigators concluded it was probably spinning to the left on impact.

The Tomahawk's Pilot's Operating Handbook states that a one-turn spin requires 1,000-1,500ft to complete and, using the proper technique, recovery may take up to one or one-and-a-half turns. It also says that intentional spins should only be started high enough to recover fully by at least 4,000ft agl.

In 1997, following a fatal accident to a Tomahawk, the US National Transportation Safety Board recommended that the Federal Aviation Administration "immediately require that slow flight and stall training be conducted at or above the minimum altitude currently specified in POH for spin training." The FAA concurred, informing all known Tomahawk operators of this recommendation.

In 2012, Piper issued a revision to the POH adding: "Caution: Slow flight and stall manoeuvres should be initiated at altitudes high enough to fully recover by at least 4,000ft AGL, to provide an adequate margin of safety in the event of an inadvertent spin." The UK Piper agent reported that, although dated May 2012, it was only available from September 2012, after this accident occurred.

The flying school's *Flying Order Book*'s section, Minimum Altitude For Training stated: "Stalling... exercises will commence from an altitude which will allow recovery to straight and level flight by 3,000ft agl when flying solo and 2,000ft AGL when flying dual. Recommended minimum commencement altitudes (for) stalling... 2,500ft dual."

In September 2012, in response to Revision 14 of the Tomahawk's POH the school updated with: "Stalling and spin recovery exercises will commence from an altitude which will allow recovery to straight and level flight by 4,000ft agl. Recommended minimum commencement heights are: Stalling 4,250ft, Spinning 5,000ft.'

The AAIB concluded that "although the aircraft's airspeed during the flight could not be calculated accurately, its variation (derived from radar data) was consistent with an exercise on slow flight... at or above an altitude of about 700ft amsl (and that it) changed direction rapidly through 180°... reducing radar coverage from the three radar heads indicating a high rate of descent. This, combined with the vertical nature of the descent identified by eyewitnesses, the ground marks and wreckage disposition, are all indicative of a spin...

"Although the exercise being taught involved slow flight, why the spin occurred and which pilot was handling is not known. The aircraft was at too low a height for an intentional spin, and the manoeuvre was neither required nor planned as part of the training... Although it was not possible to determine why the aircraft entered a spin, radar data indicates that this happened when the aircraft was at a height from which recovery was unlikely to be successful." CU

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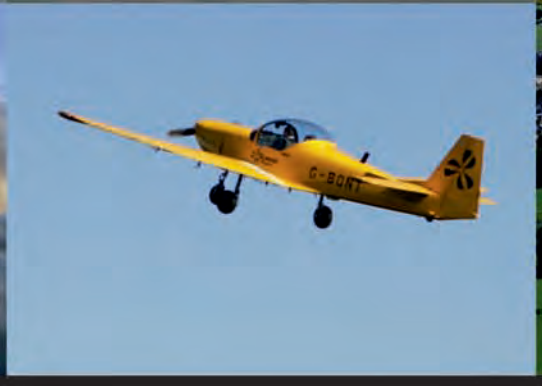

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04

INCIDENT DETAILS

- **Aircraft Type**
  Piper Cherokee 140
- **Date and Time**
  February 15, 2013 at 1345
- **Commander's Flying Experience**
  SPL, 32 hours, none on type
  Last 90 days 32 hours
  Last 28 days 20 hours

If in doubt...

FOLLOWING A DUAL LESSON at Liverpool Airport, a student pilot was cleared by his instructor to make his first solo flight, but he was unhappy with the initial take-off roll and aborted. The instructor, listening on the radio from the clubhouse, was unaware of the reason for the abort.

On a second attempt the aircraft got airborne, but at a height of about 300ft the engine lost power. The student broadcast a mayday and lowered the nose to maintain speed and decided to land on the grass within the airfield boundary, rather than risk ditching in the River Mersey. The aircraft came to rest 50m from the threshold of Rwy 09 with a collapsed nosewheel.

The instructor said he had high regard for his student's flying skills, particularly his handling of the EFATO drill, but had he known the reason for aborting the first take-off, he would have instructed him to abandon the sortie.

The flying training organisation has reiterated to all its pilots that they must cancel a flight and return should any problems be experienced prior to takeoff. The student subsequently told his instructor that on his first take-off he had felt that the engine had lost some degree of power. On the second attempt it seemed normal, and so he thought he had been mistaken. No reason for the engine failure was established. CU

05

Blunted Arrow

THE PILOT OF A PIPER ARROW III flew from his base at Wycombe Air Park to Bembridge, an airfield he had flown to recently. He planned to land on runway 12, which is 837m long and 23m wide — the same width as Wycombe, but 100m longer. On final, the Arrow was high and slightly fast, but the pilot corrected and reduced to the correct speed about 1nm from the runway.

He throttled back just before reaching the paved surface, but the aircraft sank and struck soft ground before rolling onto the runway. An inspection revealed that the aircraft had touched down about 18m short, creating deep ruts in the soft ground. The Arrow suffered a shock-loaded engine and damage to landing gear, right wing and propeller, most of which had occurred when it struck the edge of the paved surface. The pilot concluded that he had reduced power too early, causing the aircraft to land short. CU

06

Door departed

A CESSNA 402B UTILILINER was on an aerial survey photographic sortie with the photographer seated in the right rear by the emergency exit door. After completing the task the pilot started a descent and, as the aircraft passed through 4,500ft, he heard a loud bang and felt a change in air pressure. The photographer reported that the right-hand emergency exit door had detached. After declaring a PAN the pilot slowed to 140kt and returned safely to East Midlands Airport.

The door was found, relatively undamaged, on the driveway of a house. It consisted of a windowed panel fitted with a flange on its upper edge, which locates in a groove in the upper door aperture. Two locking pins attached by a cable to the door release handle secure its lower edge and are prevented from disengaging from the door lugs by two shear pins. Pulling the emergency release handle breaks the shear pins, withdraws the locking pins from the lugs and operates an arm on the lower edge of the door opening which pushes the door away from the fuselage. A 'tell-tale' wire fastened between the lever arm and aircraft structure breaks if the lever arm moves from its stowed position.

There was no evidence of adverse wear to the door attachment flange or to the two securing lugs. The release handle had not been operated, the 'tell-tale' wire was found intact and the shear pins retaining the door locking pins were in place. No defects were found in the aircraft structure or door release mechanism which would have allowed the door to separate without pulling the release handle, leaving the possibility that relative movement between door and aircraft structure, coupled with dynamic flight loads, might have been sufficient to disengage the locking pins. CU

07

Robinson rollover

A STUDENT PILOT WAS MAKING his first solo flight, comprising take-offs, landings and hovering practice in the hover square at Redhill Aerodrome. His instructor, some ten metres in front, gave the signal for him to lift into the hover, but as he slowly raised the collective the R22 lurched to the right. The student instinctively continued to raise the collective lever, the roll rate increased and was accompanied by the nose yawing to the right, both of which the student could not correct before the main rotor blades struck the ground.

The helicopter rolled onto its right side, having rotated through approximately 180°. The student attributed the accident to his failure to detect the developing dynamic rollover. He had been taught to lower the collective lever at the onset of this condition but had focused his attention on the manifold pressure gauge and not monitored the helicopter's attitude. CU

08

Uncertain destinations

THE PITTS S-2 PILOT had been instructed by ATC to report right-hand base leg for Rwy 28 at its intended destination airfield, but was then seen on radar to head in the wrong direction.

ATC believed that due to marginal weather conditions, pilot had converted to a straight-in approach, instructed him to call final and gave clearance to land. Nothing further was seen until the pilot called for taxy instructions. He had landed at Warton, the wrong airfield, without clearance.

RNAS YEOVILTON'S TOWER controller made several calls to establish contact with a Socata TB10 that appeared to be heading for a runway that was closed for maintenance. All other station-based aircraft had to be turned away or held as the intentions of the TB10's pilot were not clear. No reply was received until it was 0.5nm from touchdown, when the pilot requested to land on Rwy 06. There is no such runway at Yeovilton. It transpired that the pilot had incorrectly set the frequency and been in contact with another aerodrome 50nm away, from which he was receiving instructions for joining and landing. When it failed to appear the controller at the other aerodrome reported the aircraft missing to the Distress & Diversion Cell.

A VAN'S RV-7 landed on Hinton-in-the-Hedges' Rwy 06 while a Pitts S-1 and PA-28 were on final for Rwy 24. The Pitts pilot abandoned his approach. The RV-7's pilot had been calling Turweston instead of Hinton. Several attempts to alert him had been made by the pilots of the other aircraft. CU

09

Workload wheels-up

THE CESSNA 210D CENTURION took off from Pendle View Farm, North Yorkshire on July 20 2013 but returned to the strip after oil was seen leaking from the engine bay onto the left side of the windscreen. On short finals, the pilot handling in the left seat asked the pilot in the right seat to perform the landing because he couldn't see out. In so doing, they omitted to extend the landing gear and the aircraft landed wheels-up. The cause of the oil leakage was found to be an improperly secured filler cap. The right seat pilot stated that, given that he was asked to take control at a very late stage, and the fact that the flaps were already lowered, meant he assumed the aircraft was already fully configured for landing. The aircraft actually touched down very gently and slid to a halt on the grass on its belly. The gear warning horn did not sound (it should do when the throttle is close to idle without the gear down). The reason why it didn't sound is still being investigated. CU

10

Wrong-footed

THE PILOT OF A MORANE SAULNIER Rallye had started to taxy at Old Buckenham when he realised that braking was having no effect and no steering was available. The aircraft continued forward slowly until its right wing struck the aileron of a parked aircraft, lightly damaging both. No fault was found with the brakes, and pilot confusion over the rudder pedal arrangement was identified as the cause. He was pressing at the bottom of the pedals rather than at the top, which would have operated the brakes correctly. CU

FOR FURTHER INFORMATION ON INCIDENT REPORTS, VISIT *AAIB.GOV.UK*

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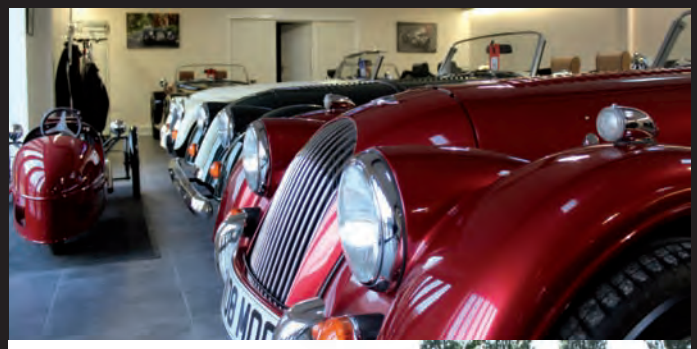


DON'T BE AFRAID TO JUST SAY NO...

The peril of peer pressure

KEITH WILSON/SFB PHOTOGRAPHIC

To this day I still find it difficult to believe how I managed to let circumstances develop to a point that almost killed me together with two of my friends. Although this incident happened a while back, it still reminds me just how young and stupid I'd been.

After I started flying, finally gaining my PPL the following year, I soon found the only flights I'd do were taking friends around the circuit or a short trip to photograph their house; cost being the main constraining factor.

On the fateful day in question, I'd managed to accumulate just over 80 hours total time of which only 30 minutes were on instruments.

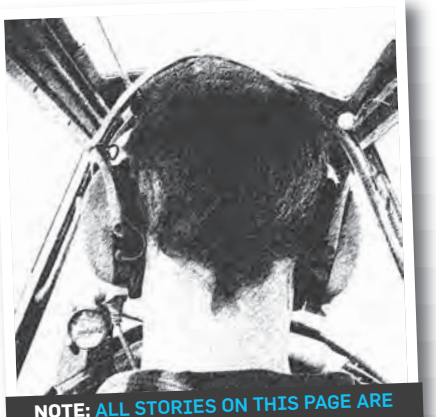
I'd been promising to take two friends flying for months; neither had flown before and, as they had to endure a 125-mile round trip drive, arranging this particular sortie proved more difficult than most.

Each time we made plans, something would go wrong: weather, work or an unserviceable aircraft.

The day we finally picked was a Sunday. I had to work in the morning so we arranged to meet at Nuthampsted, a small grass airfield a few miles North of Stansted where the aircraft was kept.

My heart sank when I looked out the bedroom window that morning: fog!

My 30-minute drive to work offered little reassurance as the murkiness covered the earth like a cold grey vale, so I decided to wait until 1100 before cancelling yet another arrangement.



NOTE: ALL STORIES ON THIS PAGE ARE SUBMITTED ANONYMOUSLY

> Sensing something was wrong, my friends were silent

However, it wasn't long before the sun had started pushing its long orange fingers through the low-lying mist, so foolishly I delayed the decision to cancel, hoping the weather would improve sufficiently to fly.

By midday the METAR for Stansted gave: wind calm, 5,000 metres in haze, sky clear and the TAF was offering a gradual improvement.

I arrived at the airfield in good time to pull the aircraft out and complete the pre-flight checks. So far so good, but the visibility still looked worryingly low; my initial enthusiasm was now turning into apprehension. I remember thinking 'if only I could find something wrong with the Robin I could cancel the flight'. My friends would be justifiably very disappointed while I would be inwardly relieved we were not able to fly.

However, minutes after completing a second walk-round (which this time included an engine run), my friends arrived; their excitement at the prospect of finally flying was obvious. They had also bought a large picnic basket crammed full of goodies to share after the trip.

As captain of the aircraft, I should have made the decision not to fly, but being young and foolish I didn't want to let them down, especially as they had driven such a long way and so many failed attempts too.

But no, I helped my friends on board, taxied out and lined up on Runway 24 where, once again, I completed another engine check, set the DI and heading bug (which was coupled to the autopilot) in line with the magnetic compass and lowered one stage of flap.

My plan was to keep as close to the airfield as possible so they would see for themselves how bad the visibility was before I announced our return for a landing. At least that was *my* plan. I opened the throttle and the Robin began its run down the runway. I eased the nosewheel off the ground and we climbed away.

It was at this point that my plan went horribly wrong... Within seconds the aircraft was engulfed in a grey mist and I knew we were in serious trouble. My heart began to thump hard and my legs shook violently on the rudder.

I levelled off at 550ft. Familiar landmarks, once visible on the ground, were now just ghostly shapes – the only sight I had of the earth was just forward of the leading edge of the wing.

I engaged the autopilot which at least kept the wings level, then turned the heading bug slowly onto a crosswind heading. The Robin responded so I continued the turn onto what I hoped was downwind. I stared hard into the greyness, hoping to catch sight of the runway.

My friends, sensing something was wrong, were now silent. I could feel their gaze burning in my direction; questions to be asked but dare not disturb me right now.

Then I saw it: the 24 threshold, a beautiful sight! I disengaged the autopilot, reduced power and let the aircraft descend. With still the first stage of flap selected, the Robin was slow enough to allow me to keep the runway in view.

Turning final I realised I was far too high. A go-around was not an option so I reduced the power to idle and pushed the stick forward. This had the effect of increasing my airspeed but I knew this was my only chance to get us all on the ground.

I floated over the chalk numbers and touched down about a third of the way into the runway. The moment the wheels were on the ground I retracted the flaps and braked hard, stopping just a few feet from the end.

I taxied slowly back to the hangar. My friends, realising how close they had come to possibly dying, said very little as they helped me put the aircraft away. We spread the contents of the hamper out over the grass. None of us felt much like eating, but the two bottles of red wine went down very well indeed.

The moral of my near misfortune? Never be too proud to say 'NO', no matter what the circumstances. It might save your life. CU

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